regarding the milk employed and the cheese manufactured therefrom. The information collected is possibly more comprehensive than any previously collected elsewhere regarding cheese-manufacture, since we have to complete manufacturing and analytical details from the point of production of the milk right through to the time of consumption of the cheese. No opinion can be offered regarding the effect of pasteurization until the cheeses have all been graded at sixteen weeks old. In addition to the series of trials connected with the effect of pasteurization, preliminary trials have also been carried out connected with modifications in the process of manufacture. These trials are to be regarded more in the light of indications than of definite information, because the number of cheeses made with each modification has been small on account of the limited time at our disposal. The reason for adopting this apparent chance method of investigation was that it was desired to get as wide a scope of suggestive causes as possible in the limited time at our disposal for the work before the close of the dairying season. The modifications in manufacture which have been introduced included—(*a*) Drying sweet compared with normal acidity at drying; (*b*) low cooking-temperature compared with normal cooking-temperature; (*c*) drying sweet and low cooking-temperature compared with normal procedure; (*d*) salting sweet compared with normal salting; (*e*) a combination of drying sweet, low cooking-temperature, and salting compared with normal procedure.

In addition to these dairy-factory investigations, Dr. McDowall and Mr. Whitehead have collected samples of milk and cheese from factories in the Manawatu district affected and non-affected with openness, with a view to ascertaining whether there was anything common to all affected factories. Nothing has been so far revealed; but it is apparent from Mr. Whitehead's bacteriological analyses that the purity of milk supplied to factories is far from satisfactory, and that factory water-supplies are not as pure as they ought to be. In view of this, factories should give close attention to the improvement of the purity of their water-supplies, and the question of milk-grading should be closely examined, as it appears that no method other than a penalty in payment will effectively improve the supply of milk delivered to factories. The chemical analyses suggest that the problem is closely bound up with complex chemistry of milk, and nothing definite can be stated till more detailed analyses are attempted. These are of an intricate nature, and will demand painstaking care and time.

Arising out of the work on openness in cheese, valuable information has been collected in connection with the production of milk by machinery. It was necessary to keep careful control over the purity of the milk produced, and, in the endeavours to keep it up to a high standard, a great deal of useful data has been collected concerning the matters of most importance in the milking of cows by machinery to produce a milk which will be as free as possible of germs.

(5) *Separated- and Whole-milk Starters.*—At the request of the Director of the Dairy Division a series of trials has been carried out using whole-milk and separated-milk starters respectively, in order to determine whether the use of whole-milk starters results in the loss of fat. This investigation was brought about by the recent regulation requiring all factories making whole-milk cheese to employ nothing but whole-milk starters. In the course of the investigation the amount of fat in the milks, starter whey, and cheese was carefully ascertained. The trials show that the use of whole-milk starter involves no additional loss of butterfat.

(6) *Separator Trials.*—Since the Institute offered to test dairy machines, subject to certain conditions, two separators have been submitted for trial. One of these has been reported upon as satisfactory.

(7) *Separating Milk at Varying Temperatures.*—Before the factory was brought into operation a series of experiments were carried out to determine the effect of separating milk at low temperatures, and to ascertain whether the fat normally lost at low separating temperatures can be economically avoided. It was shown that at temperatures of separation below 80° F. the loss of fat is fairly considerable, but not sufficient to merit the employment of expensive methods of heating. It was also shown that at low temperatures of separation the cream test was increased; further, the experiments prove that the loss is greatest when the cows are far advanced in their lactation period, hence the time at which farmers need to pay very particular attention to the temperature of their milk is towards the close of the dairying season, when cows are nearing the end of their lactations and atmospheric temperature is below normal.

(8) *The Effect of feeding Turnips upon Flavour of Milk and Cream.*—During the winter of 1928 two cows were fed Swedish turnips in varying quantities, starting with 20 lb. per head per day, and increasing at regular intervals by 5 lb. per head per day till the cows were receiving roots at the rate of 70 lb. per day. The turnips were fed in the first part of the trials immediately after milking, and, in the second part immediately before milking. In the first part no taint was produced, even at 70 lb. per day, when the milk was held for two days, but in the second part a taint appeared when the cows received 60 lb. per day. These good results were believed to be due to extremely clean methods of milking; but in view of the small number of cows their value was doubted. This experiment is being repeated at the time of writing, using soft turnips in place of Swedes.

(9) *Flooring-materials for Factories.*—As already indicated, types of flooring-materials are being experimented with in the dairy factory. These include a special type of aluminous cement called "ciment Fondu," and a bituminous compound, sold in the form of 12 in. squares, called "Prodorite." The latter is laid in special cementing-material. Small quantities of Prodorite have been supplied to several factories which are laying new floors, in order to get reports upon its usefulness under ordinary factory conditions.

(10) *Other Investigations.*—Other investigations which have recently been started include—(*a*) by Dr. McDowall, the preparation of dried and condensed products from buttermilk and whey, the usefulness of various metals (particularly chromium stainless steel) for the manufacture of dairy machinery, and the usefulness of special cements for tiled whey-tanks and the like; and (*b*), by Mr. Whitehead, the selection of special starters for the dairy industry, and points of most importance in the production of machine-drawn milk.