

think. If the curd is dry, and the moisture properly expelled, a higher development of acidity in the curd is acquired, and a finer cheese in flavour and texture will result. The first evident action of acid is to take more whey out of contact with the caseine, and the structure of the curd becomes more contracted. Always endeavour to have the curd strong enough in its own structure before the acid begins to contract it, so that it will not be ruptured. Then, when the curd is well "cooked," the texture is much stronger, and the curd will not harm with a much higher stage of acidity. If the curd is soft, however, draw the whey sweeter. Remember that a sour cheese is always a mealy dry cheese, because the action of the acid has so ruptured the curd that the particles do not stick together, rendering the caseine of the curd much less soluble. If the milk be "gassy," then it is necessary to develop more acidity before drawing the whey, because the formation of gas is always antagonistic to the formation of lactic acid, and *vice versa*.

Draw most of the whey early, and so guard against being caught unprepared for the rapid development of acid. Do not dip the curd until the presence of acid is clearly discernible by the hot-iron test. When you are troubled with "gas," allow a development of acid, such as will be indicated by threads from the hot iron at least a quarter of an inch long before the removal of the whey.

REPORT ON SEASON'S WORK BY MR. W. W. CRAWFORD, ASSISTANT-INSTRUCTOR.

My work was begun in Dunedin, on the 6th October last, when I visited the New Zealand Dairy Supply Company's Factory, advising them on many matters, principally of an engineering character, and pointing out how impossible it was to work with the small steam-raising accommodation they possessed. It was evident that this company had only made arrangements for a small business, and were suddenly faced with an enormous milk-supply, with which the manager had not the necessary appliances to cope. I advised in the erection of a creamery for this company at Hampden, as also in the taking over of a factory at Owake, Catlin's River, which places I visited several times for the purpose. The creamery at Hampden has been a great success in every way, and has worked without a hitch during the season; and I must here say that I consider that the carting of huge quantities of milk into town is a mistake in many ways, and that in every instance the milk should be separated in the district where it is produced. Not only is this desirable from a cost-of-carriage point of view, but also because fermentations of a wrong character are liable to be set up in milk which remains unskimmed for a long period, and the butter be consequently of a non-keeping kind. I also advised this company to use per-manganate of potash as a deodoriser, and issued a circular to the factories in the Middle Island advising its use; indeed I was quite astonished to find that not one dairyman I met was aware of the valuable qualities of this excellent and harmless substance.

The factories on the Taieri were subsequently visited. The Cranley Factory, belonging to the Henley Estates Company, was in a very creditable condition, and turning out fine quality cheese. The Henley Co-operative Company had not been so fortunate in the previous season, the report upon their cheese being that it was "of very inferior quality, being short and sour, and did not keep well." I soon found out what was the matter, and by lowering the working temperatures (setting at 82°) the difficulty was got over. I remained the best part of a week instructing the manager in his manufacture, with the result that the buyers' report upon the cheese for this season reads as follows: "It is of excellent quality, all the fat appears to be left in the cheese, and the flavour and texture leave nothing to be desired." Maungatua Cheese-factory and the Edendale Factory were next visited.

On the 7th December I proceeded to Le Bon's Bay, Banks Peninsula, where I found a butter-factory almost completed, in which great mistakes had been made. I suggested such alterations as were possible; but a large amount of their money could have been saved to these settlers had they obtained advice earlier.

A campaign was arranged for Banks Peninsula, and schools of instruction were held in the several bays, and lectures delivered at public meetings at Pigeon Bay, Okain's, French Farm, Wainui, German Bay, and several public meetings at Akaroa; at the last of which a resolution was passed in favour of establishing a system of creameries round the Akaroa Harbour in the various bays. This has not yet been done, owing to small differences between the residents in the respective bays; but it is my opinion that next season these settlers will be compelled to drop out of the dairy business unless they adopt the factory system of manufacture, for, although scrupulous cleanliness is the rule with the farmers on the Peninsula, I saw instances requiring the presence of a sanitary inspector—in one instance cheese was being made in the midst of filth—indescribable filth.

In Canterbury I have had the pleasure of assisting in the organization of the Canterbury Central Co-operative Dairy Company, specifying and arranging the machinery for their central factory at Addington, and creameries at Oxford, Springston, Doyleston, Halswell, and Marshlands. The Little River settlers have joined this organization, and plans are being prepared by me for large creameries in connection with the Canterbury Central Dairy Company, at Little River, Ladbroke's, and Lakeside. I look upon this as the most important dairying organization in New Zealand, for the reason that it is purely co-operative. They are providing themselves with freezing machinery and every modern appliance.

I have also prepared plans for a large creamery for the Tai-Tapu Dairy Company, at Greenpark; and afforded a great variety of information of a technical character, by letter, to a large number of people who have applied to me.

In concluding this report, allow me to express my belief that until milk is passed through the separators at a high temperature, and the cream suddenly reduced to a low one by the aid of the freezing-machine, and the butter after being made kept at a temperature below the freezing-point of water, after being thoroughly dried in a centrifugal machine, New Zealand will not land the best class of butter in England.

W. W. CRAWFORD.