

Those who are supporting the grading of cream recognize the importance of arriving at some uniformity in connection with the standard set for each grade or class by the various factories, and with this end in view several cream-grading conferences have been held during the year, which were attended by factory-managers and Instructors of the Division. At these conferences a considerable quantity of cream was examined and a decision arrived at as to the grade in which each consignment should be classified.

It has been found that where cream-grading and instruction on the farm in the treatment and care of the product go hand-in-hand progress towards the desired end can be more rapidly accomplished.

MILK-POWDER.

The question of establishing an additional number of factories for the drying of milk has received much attention from co-operative dairy companies during the year, the subject having been discussed in practically every dairying district in the Dominion. Shortly after the end of last season a number of the dairy companies operating in the Taranaki and Wellington Provinces jointly arranged for delegates to proceed to the United States of America, Canada, Great Britain, and Holland, with a view of collecting the latest information as to the payable nature of this and other branches of dairying, the methods of conducting the business, the class of machinery used, and the prospects for future development of the trade in milk-powder. Although the report furnished by the delegates shortly after their return to New Zealand has not been published, it is understood to be of a favourable nature, and more or less in accordance with the report of Mr. W. Dempster, Dairy Instructor, who visited the above-mentioned countries at the same time on behalf of the Government. The report of this officer on the investigations made by him in this connection appeared in the February number of the *Journal of Agriculture*, and contains information which should be helpful to dairy companies in any action it is proposed to take regarding the manufacture of milk-powder.

The success which has attended the drying of skim-milk, more particularly in America, lends encouragement to the co-operative interests in New Zealand, and if prices for this class of powder are maintained further developments in this branch of dairying may be looked for in the near future. In addition to the four large milk-powder factories which have been in existence for a number of years, and which are controlled by private enterprise, one co-operative company has already erected a modern factory of this nature at Waharoa, in the Waikato, and is expected to commence operations at an early date, while several others are now under way. The co-operative companies concerned in this new movement intend to confine their operations almost wholly to the drying of skim-milk, the cream from which will be made into butter. Some attention is also being given to the drying of buttermilk at a number of the larger butter-factories, and it is believed that plants for this purpose will be provided as soon as they are procurable.

The venture in co-operative milk-powder factories is being carefully watched by others who are in a position to take advantage of similar facilities providing such a step be warranted.

CASEIN.

One of the aims of all dairy companies should be to make the maximum profit by an economical use of all the by-products from their factories, whether it be by a process of manufacture into a marketable article or by otherwise disposing of them to the best advantage. The by-products from a butter-factory where whole milk is received are, strictly speaking, skim-milk and buttermilk. In the case of the "home separation" factories, of course only the buttermilk is available. But when the casein is extracted from the skim-milk and buttermilk there remains the additional by-product of casein whey in considerable volume, which is either returned to the farmer as a pig-food or is allowed to go to waste.

Under present-day conditions it is a moot point as to whether the extraction of the casein or the complete recovery of all the solids in the skim-milk and buttermilk by a process of drying to a powder will prove the most profitable. Pending a closer acquaintance with the methods and cost of drying these products to a milk-powder, a number of dairy companies are devoting their attention to the extraction of casein from one or other or both of these liquids. The number of companies following this course has recently increased, the casein being prepared in curd form at precipitating-stations and from there forwarded to a central factory, where the process is finally completed and the casein made ready for marketing.

It is estimated that the total output of casein for the year has been 1,000 tons, the greater bulk of which has been of the lactic variety. Owing, however, to a keener demand arising for rennet casein at higher values, its manufacture was commenced at a number of the precipitating-stations about the middle of the season. But while some success was attained the quality generally was not altogether satisfactory. It was found that the factories had to be specially fitted up for this branch of the work, and that a mechanical stirring-apparatus was indispensable in making this class of casein. Subsequently some really good rennet casein was prepared, and it is now evident that the difficulty at first experienced has been overcome. An unusual defect in the casein at the curd stage when extracting on the "lactic" system was met with principally in the Waikato district. This defect made its appearance in the form of the curd turning a distinct pink colour. Although the actual cause was not traced and duly identified, it was overcome by changing to what is known as the sulphuric-acid system, which produced a good casein of equal value to that of the lactic method.

The quality of a considerable portion of the casein graded during the year was lacking in uniformity, more particularly that from the Taranaki and Wellington Districts. This has been put down to the want of experience amongst some of those who are in charge of the precipitation-stations, and also to the length of time which frequently elapses before the green curd reaches the drying-factory. Casein-manufacture, like any other branch of dairying, must be conducted by those who have received a good training and have also had the necessary experience before the best results can be expected.

The Instructor in the preparation of casein has had his hands full in attending to the many phases of the industry, including the grading of the product, and he has done exceedingly well in carrying out the respective duties in connection therewith.