

SOME COLOUR-PRODUCING ORGANISMS IN BUTTER-WASHING WATER.

G. F. V. MORGAN, Dairy Bacteriologist, Wallaceville Laboratory.

DURING a recent bacteriological survey of the numbers and types of organisms found present in the waters used for washing butter in the various districts of the North and South Islands four types were isolated that are capable of rapid production of pigment. These organisms have been reported on by bacteriologists working on dairy-produce in all parts of the world, and cause sudden though not frequent epidemics of discoloration the cause of which is very often difficult to trace and equally difficult to eradicate, though the trouble often vanishes as suddenly as it makes its appearance.

So far no trouble of this nature has been reported to the Dairy Division in connection with milk and cream, in which the fault most often occurs, but varied discoloration takes place in many defrosted butter-samples, including red and violet colours. So far these colours have been found to be due to moulds of the *Fusarium* type and certain *Monilia*, but the possibility exists that the colour-producing organisms present in washing-waters may also play a part in causing this type of discoloration.

With the object of investigating this matter pure cultures of four colour-producing organisms were isolated from samples of dairy-factory water-supplies, and were introduced into milk and cream and, finally, butter. The organisms isolated were (1) *Chromobacterium violaceum*, (2) *Rhodococcus rosaceus*, (3) *Bacterium fluorescens*, and (4) a short gram-positive rod forming a bright-orange pigment.

CHROMOBACTERIUM VIOLACEUM.

This organism is a fairly widespread and common contaminant of water-supplies, and has also been isolated from bacteriological exposures of factory atmospheres. Cultures of the organism when introduced into milk produced bright violet spots over the surface, with a violet margin round the container, in two days. At atmospheric temperatures, when the milk is held for longer than this, rapid digestion commences, leaving a discoloured layer of cream and a brown-coloured serum beneath. The same action may be noticed in cream, the colour being confined to bright violet spots on the surface, and no discoloration in the body of the cream. The colour produced seems to be due to a skin or pellicle of the organisms themselves rather than to a diffusion of colour through the milk or cream.

When cream that had been inoculated with a culture of *Chromobacterium violaceum* was allowed to develop the violet spot, and was churned into butter and allowed to incubate for ten days at atmospheric temperature, the butter acquired a slightly grey appearance on the surface only, with occasional small but definitely violet spots. No discoloration was noticed in the interior when the butter was cut into sections for examination. The flavour produced was slightly rancid and similar to a coconut flavour.