

It has been stated before that the farmer seldom cools his milk below 60°. Passengers by the Government or Manawatu lines can hardly fail to notice milk-cans awaiting the trains often standing in the full glare of the sun. What wonder then that the Inspectors' reports show that the average temperature in the morning trains was 58° and in the evening trains 69°. The average temperature of the vans was—in the morning trains 67°, in the evening trains 75°. In some instances the temperature of the milk was over 80°, in one instance no less than 90°. Some trains have no special milk-vans, the milk being placed in the ordinary luggage-vans, and the cans used as shelves for other articles. It is not unusual to see other articles such as bicycles, &c., taken out of the proper milk-vans. Note Dr. Frengley's report, where he states that the top of one can was found covered with blood.

(5.) *Pollution in Collection and Storage.*

(a.) *By the Middleman.*—There are sixty-nine milk-shops in Wellington. In only twenty-four of these is dairy-produce exclusively sold. In the remaining forty-five other goods, such as vegetables and general stores, are sold as well. This is not desirable. Inspector Miller's report shows that the condition of these shops is fairly satisfactory. It is stated that at some shops the milk is pasteurised and then cooled down to 40°.

Some dairy-shop men receive milk from distributors that the latter do not require, or which they do not consider it desirable to give their customers.

(b.) *Storage by the Consumer.*—I cannot do better than quote Inspector Miller's report on the subject:—

"So far as my investigations went I did not find a single instance of milk being properly looked after by the consumer. The usual practice is to leave a jug or other vessel outside overnight, without cover or protection, very often dirty with a ring of scum round the sides from previous days. The receptacle is exposed to all sorts of filth blown about during the night, and when the milk is finally taken in it is usually stored in a cupboard along with a heterogeneous collection of articles and vegetables, meat, fish, &c."

This is confirmed by many milkmen. Of what avail their trying to keep it clean, if it is to be exposed to pollution in this manner? One milkman told me that it is not an unusual thing for mothers to bring out their babies' bottles, which had the remains of sour milk in them, to be filled.

In Dr. Finch's report he states that the storage of milk is seldom satisfactory.

BACTERIOLOGY.

Practically all bacteria in milk come from without. Some organisms such as those of tuberculosis and sepsis may gain entrance through the mammary gland. Conn has isolated over 200 different kinds of bacteria in milk. Many of these organisms are comparatively harmless.

According to Richmond, the following varieties of bacteria are found: (1) Micro-organisms acting on milk-sugar causing fermentation (a) with the production of lactic acid, (b) with the production of butyric acid, (c) with the production of alcohol; (2) micro-organisms acting on proteids (a) curdling milk without acidity and not dissolving the curd, (b) curdling the milk without acidity and afterwards dissolving the curd, (c) peptonising the proteids without curdling the milk; (3) micro-organisms producing colouring-matter; (4) micro-organisms having no direct action on milk; (5) micro-organisms that are pathogenic, giving rise to special pathological conditions. It is with the latter forms that we are chiefly concerned.

Bacteriological reports show that in fifty per cent. of examinations of milk from various parts of the colony the *Bacillus coli communis*, or the organism showing the presence of excremental pollution, was found, to say nothing of other filth organisms. If such organisms were found in a water-supply the municipal authority would deservedly be liable to considerable criticism, but the householder will cheerfully put up with these organisms in his milk-supply without comment. "Milking is a dirty trade," said a Mungaroa farmer. His own shed and yards gave ample testimony to his statement, but those of some of his neighbours belied him.

Soxhlet has truly said that in judging the quality of milk we should consider not so much what the cow fed on, as rather what kind of dung the milk contains. Much of our milk contains cow and horse dung. The former gains entrance at the farm, the latter from the dust that gains access to the householder's receptacle placed out overnight as stated in Inspector Miller's report.

It is not unusual for milk to arrive in Wellington in such a dirty condition that it is not considered advisable to distribute it before subjecting it to special preparation—such as scalding or pasteurisation. Pasteurisation cannot clean a dirty milk. "Investigations show that it is not by any means only the living bacteria in food which produce gastro-intestinal disturbances in the infant, but that the toxins resulting from bacteriological products, whether alive or dead, exist in the milk and cannot be destroyed by heat."

We must endeavour to produce a sterile food without sterilisation. Reform in this direction has been brought about in Copenhagen and other cities with the best of results: why not in Wellington?

WHO GETS THE VERY DIRTY MILK?

Last November I happened in the course of my inspections to come across an exceedingly filthy dairy. The cows, the milkers, the yards, the byres, and the utensils were all dirty in the extreme. Inquiry discovered the destination of the milk. I interviewed the managers of the receiving company next day. They owned that the milk from this farm generally arrived in a filthy condition, but denied that it was ever allowed to supplement the supply of an important institution for which they were contractors. What do you do with it then? "Oh," naively replied one of the managers, "we send that milk on our ——— Street round, where the people are mostly bad marks." The manager realised his mistake too late. "Do you retail it at the same price at you charge for good milk?" "Oh, yes."

The poor of our cities have to pay for dirty milk not only in cash, but in the lives of their children.