Studies of Milking Methods

Cleaning of Milking-machine Rubberware.—Work has been conducted on the cleaning of milking-machine rubberware. The results have shown that the removal of butterfat from rubber depends on saponification and not on a simple detergent action. This means that the use of quaternary ammonium detergents as cleansers for milking-machines will result in the efficiency of inflations falling off more than would be the case when caustic soda is used. When caustic soda is not obtainable, the use of sodium carbonate, sodium meta-silicate, or trisodium phosphate would be preferable to ammonium bases for maintaining the efficiency of milking-machine rubberware. In tests the quaternary base compounds removed less than 2 per cent. of contained butterfat from rubber samples after twenty-four hours' immersion, compared with 88 per cent. removed by caustic soda.

The Milking Efficiency of the Low-line Machine.—Since many farmers believe the bucket plant milks faster than the releaser type, with the additional advantages of a lower mastitis incidence, there has been much interest in the low-line type of milking-machine. Under carefully-controlled test conditions the two types, releaser and low-line, have been compared in their rate of milking the same cows. Mean values for rate of milking were as follows:

	Pounds Per Minute.
Releaser machine	2·618
Low-line machine	3·045
Difference	0·427

This work is being checked over a whole lactation.

Milking Methods: Temperature of Wash Water.—A trial was conducted of warm- and hot-water washing methods compared with the normal method at Ruakura of using cold water straight from a hose. No advantage was found in the use of warm or hot water. The experiment is reported fully in an article in the *Journal of Agriculture.*

Milk-ejection-recording Methods.—During the season the milk flow-recording apparatus has been gradually changed over to an improved system. The chief improvements are (1) the system is completely automatic, recording all milk-ejection curves at all milkings on a continuous strip of paper; (2) timing is automatic, the end-point of half a pound of milk per minute being automatically indicated by an all-electric unit, thus eliminating the personal errors inherent in the sight-glass; (3) the accuracy is double that of the earlier instrument, having 100 points on a full graph; (4) in cases in which the milk volume exceeds the full scale of the recorder the instrument resets automatically and continues the graph; (5) the apparatus is capable of operating with duplicate measuring units. This was necessary for the new high- versus low-line milking experiment.

A "Magnesyn" remote indicating system has been tried for the distant indication of milk weights.

Milking-machine Mechanics.—Relief Valves: Two new commercial relief valves have been tested. A new type of air-flow meter was used based on aircraft fuel-flow gauges. The new testing method is much simpler and quicker than the original method at Ruakura.

Vacuum Pumps: An improved field pump testing method has been developed. This is more convenient than that described earlier. Theoretical work on vacuum-pump design has been started. Already as a result of this work the inefficiency of present types of vacuum pump would appear to be due to poor design.

Pig-milking Machine: A machine for milking sows and measuring individual "quarter" yields has been designed and is under construction.