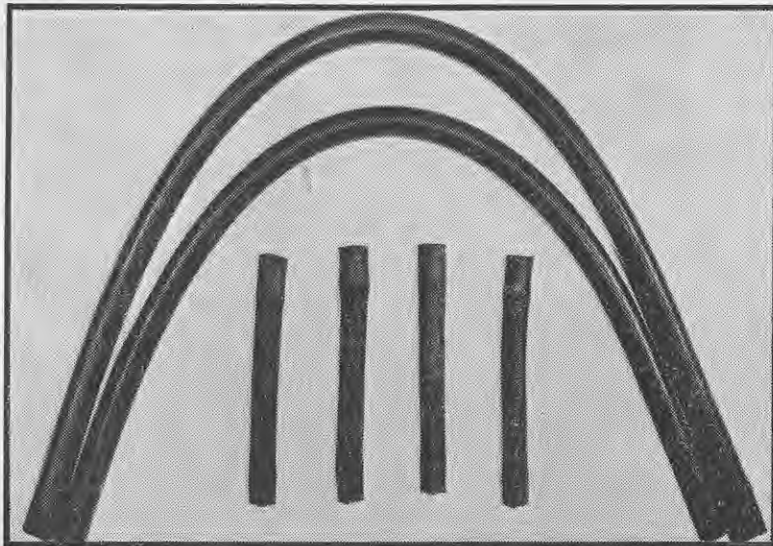


PLASTIC AND RUBBER MILKING TUBES



Carbon-black rubber milk and claw tubes after 3 years' use.

Colour, Smell, and Flexibility

The change in appearance was most pronounced. During the dairy-farm trial a colour change to "cloudiness" first appeared in 2 weeks and became progressively more marked until the tubing became completely white and opaque within 16 weeks. This colour change, which may be caused by the action of milk on the plastic as well as by the action of alkalis, removes the possibility of such tubing providing visible milking. In fact, if it is used for this purpose, it is likely to have the unsatisfactory effect of giving a false impression of the end of the milk flow.

Another unsatisfactory feature was the development of a strong, unclean smell on the inside of the tubes after they had been held for a week after their removal from the machine. This suggests that bacteria were harboured under the deposits.

Flexibility is one of the advantages of rubber when it is used between the teat cups and metal droppers. The plastic substitutes are reasonably flexible when warm, but become progressively more rigid as cold increases. In cold weather and on cold mornings the rigidity of the tubing causes an unsatisfactory side pull on the teat cups during milking.

The trials indicate that, though this plastic tubing has advantages over rubber because of its fat resistance, it is unlikely to prove a satisfactory substitute because of the reaction of the material to milk and alkalis. The rapid colour changes preclude the possibility of its providing an aid to visible milking. It is quite apparent that this type of P.V.C. tubing is not suited for use on milking machines.

The fact that it may mislead the farmer about the end of milking is a further objection to the use of any transparent tube in place of a milk rubber. A slow trickle of milk after normal machine milking is characteristic of many cows. This is evident in a transparent tube, and the cautious farmer is likely to leave the cups on for a minute or two too long to get the last drop. By using an accurate sight glass in series with the plastic tube it was found at Ruakura that the impression of flow of milk in the tube was quite misleading.

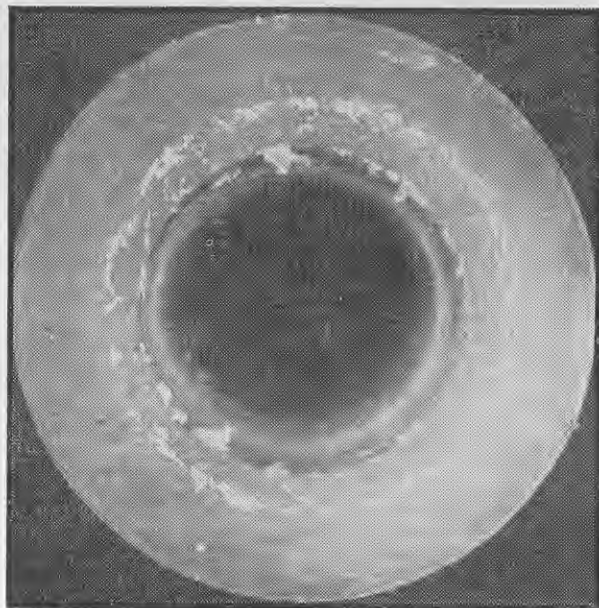
Transparent plastic milk tubes came into use in both America and Great Britain about 2 years ago, but already they are rapidly going out of favour. The objections are essentially the same as the New Zealand tests have demonstrated—the tubing becomes more or less opaque in use; it tends to crack when bent; in cold weather it becomes stiff and causes the teat cups to fall off; being transparent for part of its life, it tends to mislead the farmer about the end of milking; and it is more expensive than rubber.

Carbon-black Rubber Tubes

The present interest in plastic tubing is because of its transparency, and dissatisfaction with the quality of some rubber tubing available may be responsible for an endeavour to find a substitute. Work at the Wallaceville Animal Research Station during the war showed that the life of rubber tubes, and particularly claw tubes, could be extended greatly by the use of carbon-black as a filler. Samples of carbon-black rubber tubing were made by a local firm and tested on a number of dairy farms as well as being subjected to laboratory bending and fat-absorption tests. In most respects the carbon-black tubes were better than those containing the normal fillers. At the time of these tests normal claw tubes were found to crack and become useless in 3 to 6 months. In no case did a carbon-black tube fail in less than 1 year, and most of the carbon-black claw tubes lasted 3 years. The sheds in which the tests were performed were producing milk for town supply and so milked all the year round. The standards of shed hygiene were excellent, with twice a day caustic soda cleaning and a general high level of cleanliness. This helped greatly to prolong the life of the rubberware, but it applied to both kinds of rubber.

Carbon-black rubber is more expensive than normal milking-machine rubber, but even if it were half as dear again, it would still be a bargain, and certainly it is better than any plastic tubing tried so far. New Zealand experience is borne out by that of the largest maker of milking machines in the United States; this firm uses only carbon-black rubber for milker rubberware.

If New Zealand farmers want a better-quality milker rubber, they must persuade local manufacturers to make a suitable grade of carbon-black rubber. No synthetic plastic known at present has as good qualities as a carefully compounded rubber for use as milking-machine tubing.



The plastic material was eroded where the tube was put on and taken off the metal connecting tube.