

Hygienic and Sanitary Features of Milk Production by the Rotolactor Process

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MENTION was made in the December, 1930, issue of the *Journal* (p. 1389) of a new system of producing milk by means of the "Rotolactor," developed and used by the Walker-Gordon Laboratories, Plainsboro, N. J. Since this system embodies several features which contribute unusual sanitary safeguards to the production of clean milk, the following survey of the process is of interest to health officers and other readers.

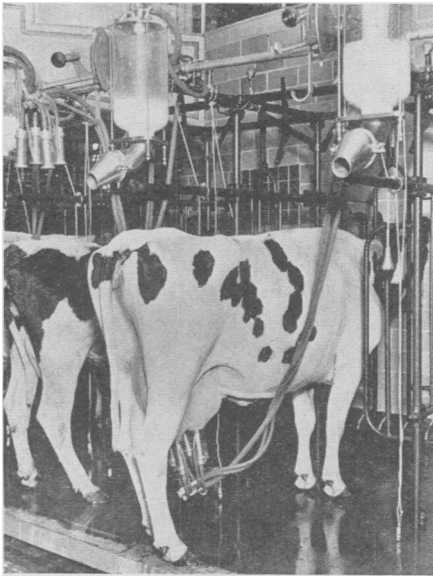
The rotolactor, as shown in the illustrations, is a rotary milking unit or slow motion merry-go-round—a circular platform on which cows are washed and milked at the rate of 240 an hour. The cows step on and off the moving platform at the rate of one every 15 seconds, but there is an intervening ride of $12\frac{1}{2}$ minutes during which the cleaning, foremilk and milking operations are carried on. The operation is continuous until all the cows have been milked.

The motives actuating the development of the rotolactor were the desire to make possible the volume production of clean milk under the most advanced conditions of hygiene and sanitation, and to demonstrate such a system to the end that it might lead to the development of better milk supplies on a wide scale.

In operation the cows move from their living quarters into a separate building and a room devoted only to milking. This room is especially equipped and designed with one principal objective—cleanliness. Walls and floors are tiled and kept clean. The air in the building is filtered and washed so that atmospheric conditions are nearly ideal; there is a complete absence of dust and objectionable odors. There

can be no doubt of the desirability of such a milking room compared to the compromise conditions which confront milk producers in the usual cow stable where there is a continual struggle between factors of stable hygiene, milk hygiene and cow comfort.

The rotolactor provides special means for washing the cows. Except in a few sections of the country where climatic conditions require that cows be stabled only at milking time (and even in these sections only rarely), has it been possible or customary to employ effective quantities of water in preparing cows for milking. On the rotolactor, the cows are subjected to a series of warm spray washes and showers directed particularly against the posterior quarters and udder. These automatic showers are augmented by 2 men with hand hoses, supplying warm water under considerable pressure, who devote their attention to the cleansing of udders and flanks. This is followed by drying of the teats and udders with clean individual towels. Such operations insure the almost complete elimination of foreign materials that might gain entrance to the milk.



Milk goes from the cow's udder to the pyrex glass without being exposed to the air and without any possibility of contamination.

An important advance has been made in the care given the milking machines. There is an individual machine for each stall of the rotolactor. During the time that the cows are being prepared for milking, the machines are subjected to thorough automatic rinsing and hot water sterilization. Every part of the apparatus to which the milk is exposed receives cleaning and scalding baths as soon as the milk of one cow is discharged from it, giving a clean and practically sterile milking unit, from teat cups to pyrex glass jar, for each cow. Such care of utensils has never before been accomplished and is believed to answer criticisms previously made of the production of high grade milk with machines. The pyrex glass jar also permits inspection of the milk as it comes from the cow and so furnishes an additional check on its quality.

The arrangements for collecting and handling the milk after it leaves the glass jars are such that there is only a momentary exposure

to the atmosphere. The milk is discharged into previously cleaned and sterilized tanks from which it is pumped through sterilized sanitary lines to the coolers, into glass lined mixing tanks, and thence to the automatic bottling and capping machines. Within little more than a minute from the time it leaves the cow, the milk has been cooled, and is maintained at a low temperature until delivered.

With respect to the spread of disease in man through milk, the human element constitutes one of the most important as well as one of the weakest factors. With the rotolactor, human contact even of a remote character is reduced to a minimum. Thus, in milking cows at the rate of 240 an hour, there are only 4 men who are possible contacts: a foremilkier, 2 men who attach teat-cups (but who touch the teats scarcely at all), and the attendant of the bottling machine. With these men under effective medical supervision, as well as all others who are even remotely associated with milk production, the possible dangers due to human contacts are as nearly eliminated as is possible, a trend which is now foremost in the preparation of all quality food products.

The production of high grade milk on the volume basis which justifies the construction of such units as the rotolactor makes possible a centralization of control and effective supervision at the source which is not economically feasible with the small scattered units that characterize our present milk supplies.

The construction of the rotolactor building with its visitors' gallery behind glass partitions is such that there can be unlimited observation and study of all milking procedures without the objections which attend the passage of visitors and others through the usual milking stables. With such a machine, backed up by healthy cows and healthy employees, the milk is provided with real protection against the entrance of extraneous bacteria or foreign matter. The degree of purity attained amply justifies the pains taken to accomplish it.