

SANITARY ASPECT OF MILK SUPPLIES.

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Sanitary milk is a much debated question in modern times. Milk is one of the most important articles of food and, including milk products—such as butter, cheese, buttermilk, etc.,—forms the basis for dishes or beverages at every meal. During the first year of human life milk is practically the only food. Milk is also excellent food for bacteria, which multiply in milk at an enormous rate. The production of milk is one of the oldest industries known. Methods of production have been brought down through many generations and consequently are difficult to change. The tendency of the milk traffic of today is towards concentration. Still there are probably more producers of milk in relation to the total amount of milk consumed, than of any other commodity.

Improvement in milk supplies must come from various sources and the problem must be attacked from various angles. Education of producer and consumer is the keynote to the situation. The methods in vogue at present for improving milk supplies are concentrated necessarily on elimination of disease germs. The presence of these germs in milk or water and other articles of food is difficult to detect. Disease bacteria, if present, multiply but slowly in milk, if it is kept at low temperatures. Also, the number of disease germs is usually small if compared with the number of harmless bacteria always present in milk. With modern bacteriological methods, therefore, disease germs are easily overlooked. Indicators have to be used in milk as well as in water. In water the presence of colon bacilli is usually taken as an indication of the presence of disease germs. Colon bacilli come from the intestinal canal of man and may indicate the presence of germs of intestinal diseases. Colon bacilli from other sources are of no value in this respect. Colon bacilli in milk indicate fecal contamination, but since they are derived from the cow, they do not lead us to assume that disease germs are present, since cows are not susceptible to intestinal infections of man. Fecal contamination, direct or indirect through dust, is the most common source of bacteria in milk. It is clear from the foregoing argument, that total numbers of bacteria in milk are, as far as present knowledge goes, the only index by which we can judge milk.

The question now is obvious, whether a low bacterial count is sufficient to guarantee safety of milk. We do not think so. A low count gives no adequate assurance that pathogenic germs from "germ carriers" have not entered. Carriers

of tubercle bacilli, of typhoid bacilli, of diphtheria bacilli, of the germs of scarlet fever may be employed in a dairy and unconsciously communicate the virus of these and other diseases to the milk. The only reasonable safeguard against carriers is efficient medical supervision of dairy employes. Such supervision is of greater bearing than exceedingly small numbers of bacteria.

For pasteurized milk the bacterial count is of importance. Fortunately for us, most pathogenic bacteria are destroyed by efficient pasteurization. In fact, we may safely say, that all pathogenic bacteria which carry infection through the intestinal tract, are destroyed by efficient pasteurization. Bacterial efficiency of pasteurizing apparatus is therefore of similar value as bacterial efficiency of water purification plants.

Reduction of numbers of bacteria and proper medical supervision of employes are the two most important factors in improving milk supplies. Medical supervision is of prime importance when the raw product is to be consumed, but of secondary importance if milk is to be pasteurized. It should be one of the duties of health departments to control pasteurizing machines. The style of machine should be approved by the commissioner of health and the temperature should be recorded automatically. The records may be kept in locked cases, the keys to which are held by the department of health.

The producing dairies should be regularly inspected. The inspectors report on equipment and methods. Only well trained men should be employed as inspectors. They should be familiar with the objects of their work and should approach the producer as friends and advisers, not as officers, who are bound to find fault. Unfortunately inspectors have frequently antagonized producers. Municipal governments are not devoting sufficient funds to employ high grade men as inspectors. The consequence is, that producers object to making improvements and the detrimental influence of such conditions cannot be overestimated. In several states of the Union laws have been enacted, forbidding the enforcement of ordinances, demanding tuberculin testing of cattle. Legislation of this nature is the direct result of antagonism developed among producers. Thus tubercular cattle are permitted to furnish milk which becomes a serious menace to public health.

The distribution of milk should be in bottles only, except for wholesale trade. In large cities the can and dipper have been practically abolished. Proper licensing regulations and periodical inspection of central stations and delivery wagons will control this part of the milk traffic.

Finally we have to consider the handling of milk in the home. This is really the most difficult part of the problem.

Educational pamphlets, bulletins from boards of health, co-operation of the daily press and similiar means of reaching the consumer must be employed. If we can convince the consumer that clean milk is healthful, and should contain but a small number of bacteria, that it should be sold in bottles only, that it should be cold when delivered, that efficiently pasteurized milk is the safest milk under present conditions—if the consumer is convinced of these points, he will demand the right kind of milk and milk of lower standard will be driven from the market.
