CARBONATED MILK.

SUMMARIZED BY
F. H. HALL

FROM BULLETIN BY
L. L. VAN SLYKE AND ALFRED W. BOSWORTH.

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** Deceased.
In a study of dairy products made by the Chemical Department of this Station it was noticed that milk containing carbon dioxide (carbonic acid gas) appeared to keep sweet much longer than fresh, untreated milk held under similar conditions. Accordingly, a series of tests was planned and carried out to determine to what extent and under what conditions this gas delays the souring of milk. It was found very effective in certain cases, so that its use appears to be commercially practicable.

In the tests fresh milk and pasteurized milk were mixed with the gas by different methods, and the milk and gas were held without pressure and under pressures running up as high as 175 lbs. to the square inch.

Passing a stream of this gas through the milk did not seem to have much effect; but whenever the gas was held in the milk under pressure the souring was delayed. Up to a certain point, the greater the pressure and, consequently, the greater the quantity of gas for equal quantities of milk, the longer was the souring delayed.

The best results were secured when newly pasteurized milk or cleanly drawn fresh milk was treated with carbon dioxide in a tank, such as is used in bottling establishments in preparing carbonated drinks, and then placed in siphon bottles. When charged under pressures of from 70 to 175 pounds and kept at temperatures ranging from 35° to 60°, bottles of clean fresh milk or pas-

*This is a brief review of Bulletin No. 292 of this Station, on the Effect of Treating Milk with Carbon Dioxide Gas under Pressure, by L. L. Van Slyke and Alfred W. Bosworth. Any one interested in the detailed account of the investigations will be furnished, on application, with a copy of the complete bulletin. The names of those who so request will be placed on the mailing list to receive future bulletins of the Station, popular or complete as desired. Bulletins are issued at irregular intervals, as investigations are completed, not monthly.
teurized milk kept from four to five months without perceptible increase in acidity.

Milk carbonated under a pressure of 70 pounds Carbonated milk as a beverage. comes from the bottle as a foamy mass, more or less like kumiss that is two or three days old. It has a slightly acid, pleasant flavor, due to the carbon dioxide, and has a somewhat more salty taste than ordinary milk. In the case of carbonated milk pasteurized at 185° F., there is, of course, something of a "cooked" taste. Though the cream separates in the bottle, it is thoroughly remixed by a little shaking as the milk comes from the bottle and there is no appearance of separate particles of cream. All who have had occasion to test the quality of carbonated milk as a beverage agree in regarding it as a pleasant drink. In the case of milk bottled under a pressure of 150 pounds of carbon dioxide, the milk delivered from the siphon is about the consistency of whipped cream, but, on standing a short time, it changes into a readily drinkable condition. From the experience we have had, it would seem that carbonated milk might easily be made a fairly popular beverage.

There are several practical applications in which carbonated milk may find possible usefulness. On steamships, it would be easily possible to furnish sweet milk for several weeks from a supply of carbonated milk. Carbonated milk may be found very useful in hospitals. Experiments should be made with invalids in order to ascertain to what extent carbonated milk can be made to take the place of kumiss and similar drinks. It is also possible that carbonated milk might be found useful in feeding children in many cases where ordinary cows' milk does not digest well. While we did not treat any cream with carbon dioxide under pressure, we believe that whipped cream could easily be prepared this way with a pressure of 150 pounds or less and could be used directly from a siphon bottle with convenience.

In the preparation of carbonated milk, several precautions are necessary, in order to meet with success. In the first place, the milk should be drawn so as to be as free as possible from dirt and promptly cooled below 45° F. It should be carbonated within a few hours. All the vessels with which the milk comes in contact, from milking to bottling, should be carefully sterilized before use. In case milk cannot be carbonated quite promptly after drawing, it should be thoroughly pasteurized before being charged and bottled.
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