

milk boiled in a glass retort, with nearly a similar volume of atmospheric air at 266°, quickly heated and then sealed up, did not coagulate in the space of half a year.

Hallier infers from this that the milk probably contains the milk acid ferment, ready formed, and that by heating it to a temperature of over 212° it is destroyed; and further, that the milk acid fermentation, once commenced, requires no admission of oxygen for its continuance. Of animal organisms in normal milk, Fox observed, in 1841, two *infusoria*, a smaller *monad* that always appeared to originate the earliest and most frequently in milk, and a larger *polygastine* (an animalcula of many stomachs) that was regarded by Fox as a bristly or hairy *monad*. According to Hallier, *vibrio lineola* often appeared on very sour milk.

I have now given you the recent views of scientists in regard to the souring and coagulation of milk. You have seen that the milk contains within itself the seeds of decomposition. Others of a similar nature come from the atmosphere, and thus in a short time the milk, so to speak, begins to vegetate, or is filled with innumerable microscopical vegetable organisms, plants or parasites, which, feeding upon its constituents, bring about decomposition and the separation of certain solids from the water which holds them in solution. There is yet much mystery concerning the nature of these organisms, and the manner of their springing into life. Dr. Bastian, in his recent work on the "Beginning of Life," advances the theory of evolution or spontaneous generation. That question need not be discussed in this place, since it is only the existence of these organisms in milk that now claims attention. At all events, the practical dairyman will have a reasonable explanation, from the data given, as to the reason why milk, heated to the boiling point, will keep longer than fresh milk—because many of the organisms or their spores are killed by the heat. And experiments show that fresh milk placed in bottles, and plunged in boiling brine, thereby acquiring a temperature above that received by boiling water, will destroy a still greater number of organisms, thus fitting the milk to keep sound for months, if the air be excluded by corking the bottles.

That great experimenter on milk—Gail Borden—though unacquainted with the germ theory, struck at the very root of this question in his practical method for milk preservation. He held from the first that milk should be drawn only from healthy, well-fed cows, and in the

most cleanly manner, free from harmful odors, and the heating wells, be out of the influence

Mr. Borden the proper education here that the combined effort for to reach farmers a immense progress manufacturers, the the leading principle had the farmers at the knowledge gained for progress and is beyond question to yet been manufactured

What, then, inaugurate an in Men still persist stable. They still offense. They are to wade through and animal matter of diseased cows and caked udders organisms that must be overcome obtained. I think that interest that a reformation is patrons, visiting were fairly in hand, and insist