

There was some plausibility in this theory, from the fact that casein, being feebly acid, combines readily with soda, but upon the presentation of a stronger acid the soda lets go the feebler, to unite with the stronger acid, and leaves the casein free to form curd. I followed out this theory by curdling milk with a variety of acid, but never succeeded in producing a perfect coagulation, nor in obtaining a cheesy flavor to the pressed curd.

In the next place, the usual preparation of rennet being strongly acid, I put potash enough in my rennet jar to make its contents so alkaline that they would make the milk they were to be mixed with assume the same condition. The rennet so treated curdled the milk perfectly, and showed an efficiency but little inferior to its former strength. The alkaline rennet was used several times with like effect.

This experiment completely upset the old theory, as it showed that the coagulating agent was not necessarily connected with any acid or alkaline condition, either of the milk or rennet. The matter was thus left in the dark, and remained so for some time. At length the thought occurred to me that since the active principle in rennet was not changed either by the presence of an acid or an alkali, but was independent of both, it must depend upon some organic structure in the gastric juice; for if it was a simple liquid, it could not be otherwise than that either an acid or alkali would change it and prevent a check, if not destroy its action. An experiment was made to test this suggestion. A large piece of pine charcoal was taken and made concave on one side, so as to hold a small amount of liquid, and used as a filter. If there was organic matter in the rennet, it would, in passing through, be caught and retained in the cavities of the coal while the liquid would pass through. The rennet so filtered, lost all its strength and all its peculiar odor—nothing apparently, but pure brine came through. The presence of some organic matter was now more probable. After a time, a microscope was procured to look for the supposed structure. Upon examination, the liquid rennet was found to contain myriads of minute globular bodies, having a uniform appearance. Experiments, which I need not here repeat, were then made to ascertain whether these globular bodies were necessarily connected with the strength of the rennet, and the result showed that its efficiency depended upon their presence and relative numbers. This was considered an important point gained, and the investigation of the infinitesimal bodies was pursued with a deeper interest. They were found to be composed of an almost infinitely small speck of light-colored liquid, inclosed with a very delicate sack, and to have a darker colored nucleus in the centre. They were found to be what are called animal cells. By examining the stomachs of other animals, their existence and office was found to be not peculiar to the bovine race. Similar ones were found in the rennet of the lamb and pig, with slight variations peculiar to each. In the lamb they were small and feeble; in the omnivorous pig they were large and powerful, and more often seen in clusters of singular shape, while in the calf they are generally single.