

like the nucleus of a large globule, and is soon displaced by another small, fat globule, which emerges from the milk globule, and either combines with the larger globules, or is only made to project in such a manner that the milk globule exhibits a faint resemblance to a fermentation fungus, in the process of development. When treated with less diluted acetic acid, the milk globules become confluent. The best proof of the existence of an investing membrane is afforded by an experiment instituted by Metscherlich. On shaking perfectly fresh milk with ether, it is scarcely at all changed—the ether merely taking up a little fat. Now, if the milk were a simple emulsion, it would yield all its fat to the ether, and would be converted into a transparent, tolerably clear fluid. As this is not the case, the separate fat vesicles must be surrounded by an insoluble substance. If now we add a substance capable of dissolving these membranes, ether, when shaken with the milk, will act on it precisely as on an emulsion—that is to say, it will take up the fatty matters—and, indeed, this is the case if a little caustic or carbonate alkali be added to the milk before it is shaken with ether. Sulphate of soda has the property of causing the capsules of the milk globules to burst, after which the fat can be extracted from the milk by ether; the watery fluid, however, remains very turbid, but no longer exhibits under the microscope either milk globules or shreds of destroyed capsules, but only extremely minute, scarcely insoluble, molecular granules, which are unquestionably the fragments of the destroyed capsules, and do not consist of finely comminuted fat; for on addition of a little potash they not only do not disappear under the microscope, but the fluid, which had previously retained its milky color, becomes perfectly clear and limpid. What, then, is the composition of this membrane surrounding the milk globules? The chemists have supposed it to be caseine; but, if it is caseine, is it not curious that this caseine is in a coagulated condition, while the bulk of that substance in the milk is in a soluble form? It has been supposed by some chemists that caseine is a compound substance, and that we are yet to separate and define its constituents. In our entire ignorance, says Lehmann, of the true chemical constituents of caseine, we cannot resort to any experiments to elucidate its mode of formation. Although we are unable distinctly to recognize the presence of caseine in the blood, there is little doubt that it is found there, and that it is merely separated

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