Special Selection

THE SOLUBLE FERMENTS OF COW'S MILK.

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It is a well-known fact that milk is in itself a complete food, since it contains the three alimentary elements by which all life is sustained, namely, the albuminoids, the fats, and the sugars. But, although human life may be indefinitely maintained by the exclusive use of milk, the seemingly paradoxical fact has been established that an artificial mixture of albumins, fats, and sugars, although in the same proportions as when contained in natural milk, will not sustain life beyond a limited period. The following experiment made by Lunin demonstrates this interesting fact:

Mice, as well as men, can live indefinitely on natural milk as a sole diet. But when they are fed on artificial milk containing all the chemical constituents of an excellent milk, they die in from twenty to thirty days. In this experiment Lunin prepared his milk in the following manner: The milk was diluted with water, and then precipitated in acetic acid. The flaky precipitate was then washed with acidulated water, leaving it a mixture solely of casein and fat. To this quantity of albuminoid and fatty matter, he added cane-sugar in the proper physiological proportion to represent the carbohydrates. Finally he added the salts that are contained in natural milk, in the exact quantities in which they are found in that substance. Theoretically this artificial milk constituted a perfect food, since it contained the three principal groups as well as the salts. Nevertheless, the mice on which the experiments were made did not live, although they relished the diet and ate plentifully of the food.

Lunin was studying the rôle played by the mineral salts in nutrition, and at the time when he announced the results of his experiments the scientific world was considerably surprised.

It is now well understood that the factor which was lacking in Lunin's artificial milk, that which was necessary in order to make this product capable of sustaining indefinitely the life of