

cially the lactic acid bacteria, left alive at the end of pasteurization. The physiological character of the milk—that is, the albumin and casein—is not changed in pasteurization.

In sterilization, on the other hand, every live organism—the bacteria, cocci, yeasts, fungoids, and parasites—are all destroyed; the physiological character of the milk is changed by coagulation of the albumins and the fixing of the caseins. Milk in this form, it may be readily understood, is not desirable as a food for children, sick with gastro-intestinal diseases, and, when sterile milk is used for feeding, the coagulated albumins and the fixed caseins are usually broken up by the employment of some such agent as a rennet ferment. The milk in the presence of a small quantity of this rennet ferment is kept at a temperature of, say, 120° for about an hour. At the end of this time the milk has undergone a splitting-up process that makes it almost a predigested food, and oftentimes sick children that can take no other food whatever will thrive on these formula mixtures for several days while their stomachs are resting and recovering from the inflammatory conditions.

This question of sterilization and pasteurization is not a settled problem by any means. Some of the ablest physiological minds in the world are still perplexed about it, and the physiologists are not agreed. I think the most enthusiastic advocates of pasteurized milk claim only that it is better than bad raw milk.

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#### A NEW METHOD OF STERILIZING MILK.

While pasteurization effectually destroys germs in milk, it somewhat modifies both the properties and the flavour. A new process invented by Dr. Lobeck, of Leipsic, is said to be free from these objections. Pasteurization consists in heating the milk to a temperature of from 144° to 149° F. The new method consists of a more sudden heating to about 135° F., followed by an immediate cooling, the theory being that harmful bacteria are instantly destroyed by the right temperature, while a change in the flavour and other qualities of the milk requires longer time to effect.

The need for care as to a safe milk supply is emphasised by Professor Milton J. Rosenau, of the Harvard Medical School, who says that "one of the greatest tragedies for the sanitarian is to see disease and death follow the trail of infected milk into households that are otherwise in prime sanitary condition."

#### SEPSIS—WHAT IT IS, AND HOW TO AVOID IT.

A septic condition implies the invasion of living tissue by living micro-organisms, which grow and increase at the expense of their host.

It is necessary to clearly understand that without the introduction of such micro-organisms, inflammation and a septic condition cannot occur. Certain diseases are characterised as *infectious*, which implies that their specific micro-organisms are discharged from the body of their host, either in the excreta, secretions, or desquamated particles of the skin. As an example of each we may mention: Typhoid (the excreta are full of the bacillus typhosus); diphtheria (the secretion of the throat and nose will be found to contain the Klebs-Löffler, or specific diphtheria bacillus); scarlet fever (the dried particles of the skin in this disease disseminate the streptococcus scarlatinæ).

Others—*e.g.*, syphilis and ringworm—require close contact before their specific microbes attack a second host, and are known as *contagious* diseases.

Others, again, can only be acquired or transmitted by inoculation, and are known as *infective* diseases, of which malaria is an example.

Some parasites produce more toxin (poison) than others. There is, for example, a wide difference in the toxicity of the diphtheria bacillus, which causes a virulent general intoxication, and the specific organism of ringworm, which merely causes a local infection.

Experiments have shown that micro-organisms are invariably present in pus, and in the various lesions, or even in the bloodstream, of a patient suffering from any septic disease. The chief of these organisms are various micrococci and streptococci. Wounds which are made with sterile instruments and kept under aseptic conditions from start to finish do not suppurate, and contain no septic organisms. It is considered a disgrace for an artificial wound—*e.g.*, the abdominal incision of a Caesarian section—to suppurate, because such suppuration will show that the surgeon's or nurse's aseptic technique was faulty. In the days before aseptic midwifery was heard of, childbirth was a terribly dangerous ordeal. Tremendous numbers of women died from what was called "puerperal fever," a septic condition which was then regarded as an almost natural complication of parturition. We know now that it is caused by the entrance of micro-

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