

## The Midwife.

### BACTERIOLOGICAL DIAGNOSIS AND TREATMENT OF ALIMENTARY DISEASE IN THE INFANT AND CHILD.

Anything from the pen of Dr. Ralph Vincent, Senior Physician and Director of the Research Laboratory at the Infants' Hospital, Vincent Square, London, on alimentary disease in infants and children, must be received with respect, for probably no one in the three kingdoms has investigated the subject with such thoroughness, patience and enthusiasm. The results of some of his investigations are embodied in a pamphlet published by the American Medical Association and are of much interest to nurses.

The whole pamphlet will repay careful study. Dr. Vincent begins by stating the following proposition which none will gainsay:—

"The study of the bacteriology of the alimentary canal in the infant and child is so essentially a study of the behaviour of bacteria in varying conditions that a consideration of the normal and abnormal bacteriology of milk is of the first importance. Since milk is the natural diet of infancy, we are compelled, in endeavouring to appraise the actual nature and extent of the pathological condition found in any given case, to consider the precise circumstances in which the same or allied processes occur in milk outside the body; for, by experimentally reproducing in the laboratory test-tube the biochemical processes taking place in the alimentary canal, we are seeking to establish these fundamental correlations which are essential to accurate and scientific diagnosis. It is further of importance that we should be able to appreciate the nature of the biochemical processes occurring under normal conditions, for we can scarcely be in a position to understand the abnormal unless we are acquainted with the normal

processes, while we can only estimate the extent and nature of disorder by the measure of its departure from the conditions of health."

He then classifies the organisms found, grouping them according to the conditions determining their growth in, and their action on, milk, including (1) bacteria producing lactic acid, but not producing gas. This group is represented by the *Streptococcus lacticus*, the typical organism growing in pure milk at 38 C, and the *Bacillus lacticus*, which is exceptionally tolerant of acid and appears

at a later stage when the acidity has become too great for the streptococcus; (2) bacteria producing lactic acid, carbon dioxide and alcohol. This group includes the whole of the colon organisms; (3) bacteria growing in pasteurized milk, i.e., milk subjected to a temperature between 65 C. and 100 C.; (4) bacteria growing in milk after it has been raised to 100 C. owing to the fact that their spores have not been destroyed. This group embraces a large number of organisms, the chief representatives being the *Bacillus subtilis*, and the *Bacillus mesentericus vulgaris*. When they develop in the intestine extremely powerful poisons of an alkaloidal character are created, and the absorption of these poisons produces profound coma and death.

These organisms are quite unable to grow in

raw milk, for their growth is entirely prevented by the acid-forming bacteria.

"Milk," we read, "is always acid at the time of milking. The initial acidity varies between 15 and 18 degrees. The development of acidity is due entirely to the action of micro-organisms and consequently the temperature at which milk is kept, and the time of exposure to this temperature, are the chief factors determining the rate at which acid is produced. The production of acid, however, does not proceed regularly. A remarkable feature connected with the development of the streptococcus is that there are two stages in its

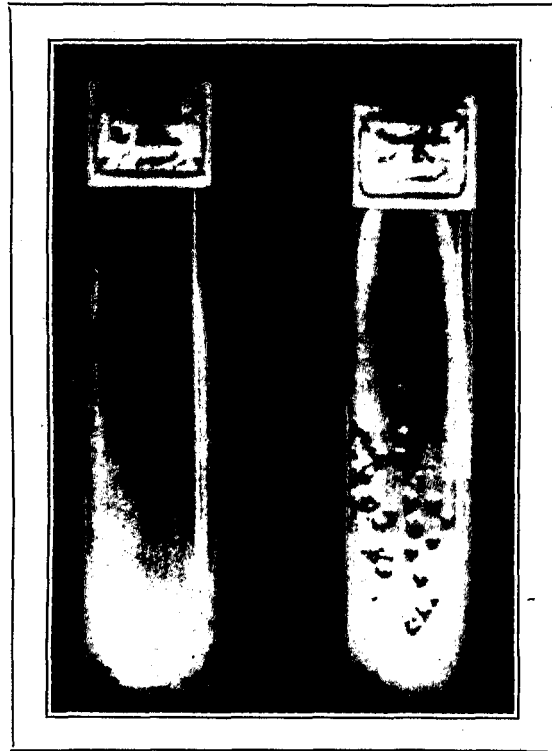


Fig. 1.—Growth of tubercle bacillus in medium without toxin. Fig. 2.—Growth of tubercle bacillus in medium with toxin.

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