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THE BACTERIOLOGY OF TUBERCULOSIS.

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IT is, to-day, but a few months under twenty years, since Robert Koch first published the results of his investigations upon the etiology of tuberculosis, in the *Berliner klinische Wochenschrift*, and although our knowledge of the disease and its bacteriology has slowly progressed since that date, his work remains as one of the best examples of careful and thorough investigation before publication, that we know of. In the case of no other disease have the foundations of etiology been so well laid; in fact, if we seek for comparisons, the best is Koch's own work on anthrax, the publication of which led to his removal from a country practice to the directorship of the Hygienic Institute in Berlin.

As a result of these studies we were taught how to recognize the bacillus in the tissues, and how to cultivate it in artificial media and although we now have a variety of staining methods, they are all largely based on the indications given in Koch's early articles; and whilst we have found that the demands of the bacillus in regard to food *in vitro* are much less exacting than believed by him, still for luxuriant culture our best methods approach those given in 1882.

It is hardly necessary in this article to give a detailed account of the processes of staining and cultivating the bacillus, which may be found in any elementary textbook, but it may be well to touch briefly on certain points which seem to have a bearing on the etiology of the disease and on the relationships of the organism to other forms.

As first described, we recognized the bacillus of tuberculosis as a slender, unbranched rod, straight, or slightly curved, which took the stain used to demonstrate it with difficulty, but which retained that stain with marked tenacity when subjected to decolorizing reagents such as alcohol or acids.

It was however soon noted by a number of observers, that the organism did not always show this unbranched character, but that sometimes in the tissues, more often in the cultures, it showed a tendency to form short branches, which led to a doubt as to the advisability of classifying it with the other bacteria. Whether this branching is to be considered true branching or not, its existence is undoubted, and gradually extending observations have shown that not only the bacillus of tuber-