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THE GERMS OF TYPHOID FEVER.

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In 1880, Eberth,¹ of Zurich, in eighteen out of forty cases of typhoid fever, found in sections of the spleen and mesenteric glands a short bacillus which he was unable to detect in similar examinations of twenty-four persons who had died of other diseases. From these facts this distinguished Swiss investigator thought himself entitled to the claim of the discovery of the true germ of typhoid fever.

Before Eberth's report, Koch had observed this germ, and had micro-photographs of it. Indeed before Koch,² Browicz,³ Sokoloff,⁴ and Fischel,⁵ had individually found in the tissues of typhoid subjects oval bacilli which were probably identical with those of Eberth and Koch. This organism is designated by some as the Koch-Eberth germ, and by others as the Eberth germ, or bacillus. For the sake of brevity, I shall in the following discussion employ the shorter name.

This organism is now regarded by the majority of bacteriologists as the true and only cause of typhoid fever, and I shall give my attention first to the grounds upon which this belief is founded. Has it been conclusively demonstrated that the Eberth germ is the sole and sufficient cause of typhoid fever? To what extent have the four rules of Koch been complied with in the study of this germ? Are there any reasons outside of

these rules for founding a belief either for or against the specific nature of this bacillus?

In the first place, is this organism found invariably in typhoid fever? As has been stated, in his first report Eberth found it in eighteen out of forty cases; but since that time methods have been perfected and many other investigators have studied this point. In the examination of twenty-eight bodies, dead from typhoid fever, Gaffky⁶ found the Eberth germ in twenty-six; Frankel and Simmonds⁷ reported it in twenty-five out of twenty-nine cases; Seitz in twenty-two out of twenty-four; Rietsch⁸ in thirty-five out of thirty-six; and Kowalski⁹ found it present in each of twenty-nine cases.

Without citing further authorities, I may say that the number of cases of genuine typhoid fever in which this germ has not been reported, when the examinations have been made by competent men, is so small that we are justified in claiming that the first of Koch's rules has been complied with. Indeed, in reading over the great number of cases referred to in the volumes of Baumgarten's "Jahresbericht," in which the Eberth germ has been reported to be present, one becomes somewhat suspicious of the universality and readiness with which this organism has been detected. Gaffky and others found it always present in the mesenteric glands and spleen, often in the liver, and not so frequently in the kidney. In the intestine it has been found, in the early stages, in the swollen follicles and plaques; and in the deeper layers, before there is any necrosis; but with the advent