THE DISTRIBUTION OF BACTERIA IN VARIOUS
SOIL TYPES.

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When the great multitude of bacteria occurring in nature was first comprehended, it was supposed that they were distributed rather indiscriminately over everything, and that any material in which microorganisms could grow would contain whatever bacteria happened to contaminate it. This was soon learned to be false. Certain bacteria were found to be typical of milk, and others of water. It became evident that the microflora of any natural medium depends not so much on the kinds of germs that have found entrance as upon those that have been favored by the environment. This has led naturally to two questions of interest to us: first whether soil, also, has a microflora of its own, and second whether different soils contain different kinds of bacteria. This paper is in answer to these questions.

In the course of some recent investigations, I have made a careful examination of two soils, one at Ithaca, N. Y., the other at Geneva, N. Y. The two soils are very much alike and are classified as Dunkirk clay loam and Dunkirk silty clay loam, respectively. For the sake of comparison a more superficial study has been made of about a dozen other soil types occurring near Geneva. As classified by the U. S. Bureau of Soils, they fall mostly into the Dunkirk, Ontario, and Genesee series; while in texture they vary from muck and clay to fine sand. Although less thorough, the examination of these various soils was sufficient to show whether their microflora was like that of the two soil types first studied.

The results are somewhat surprising. Even the quantitative determinations are of interest; although they were made under such diverse conditions of weather that it is difficult to make a comparison between the different soils. These data are given in Table I. Whenever a long series of tests has been made of any one soil, only the highest and the lowest counts have been included. The table shows the moisture content of the various samples, and the state of cultivation. Temperature, although undoubtedly a factor, of equal importance, is omitted here; for its relation to numbers of bacteria has proved to be so complicated that it would only confuse the table if it were included.