ORGANIC matter is a source of food for microorganisms. When it is added to the soil there is an increase in microbial activity if other conditions are favorable. When microorganisms grow in the soil they may produce gases, liquids, and solids. The soil as a medium for the transmission of water may be affected by these products, particularly if biological activity reduces or increases the number and size of spaces between the structure units through which the water must pass. Microorganisms may also decompose structure-stabilizing agents.

It is conceivable that if organic substances were allowed to decay in the soil that the decomposition products and the microbial tissue might decrease the size of the pores or disrupt the continuity of pores, and this might reduce percolation. McCalla (4) showed that when sucrose was mixed with the soil, incubated, and the soil dried and stirred prior to testing, the percolation rate was increased from 3.17 inches for the untreated, to 69.30 inches total percolation for an 8-hour period. If the sucrose was incubated in the percolator and the soil kept wet and not stirred, the percolation for the 8-hour period dropped from 3.17 for the untreated, to 1.07 inches. The addition of sucrose to a soil to equal a 1% concentration may result in as much as 100 fold increase in number of bacterial (6) in a few days. By the management of these microorganisms it appears that water percolation may be increased under one set of conditions, or decreased under another. Following the incubation period of 5 days without stirring, the percolation rate was lower than in the untreated, however, when the soil was dried and stirred following the incubation period the percolation rate was greatly increased. These results are in line with those of Muckel (5) and others (2, 6) that microbial activity may increase aggregation and percolation.

In water spreading for replenishing the ground water, Muckel (5) suggested that "if energy material is added to a soil so as to promote microbial activity, the percolation rate could be expected to decrease rapidly, but upon drying followed by reapplication of water the percolation could be greater than the initial run. This has occurred on field ponds." Allison (1), using a number of organic and inorganic disinfectants, concluded that the decreased permeability was probably due to microbial activity.