RECENTLY in this Journal\(^1\) a method of applying water to an experimental area was described in which it was implied that subsurface lateral movement of water was satisfactorily controlled. Using an 8-inch-diameter ring, located within a 16-inch-diameter ring, which in turn was located within a 24-inch wetted square, it is stated that “lateral movement of water from the central ring was either completely eliminated or greatly diminished.” It is said that tubes 14 inches long inserted in the soil “gave good measurement of the initial intake of water into the soil and of the relative permeability of the soil core enclosed within the cylinder, but could not be relied upon to give quantitative information regarding the permeability and the percolation rate of the entire soil profile.”

This conclusion is not surprising, but the problem apparently is broader than that indicated. It may be noted in passing also that the particular method referred to is one that we have not used in our work of the past three years, except in a comparative way. It will be seen from the detailed data in a forthcoming report, however, that certain limitations are to be found in each of the different methods thus far developed for measurement of infiltration.

Evidently the authors were interested in percolation rates rather than infiltration rates, and their procedures have deviated considerably from those that we have used with this type of equipment. They have reported using 8 to 10 replicates and found high variability. Normally we have used 20 to 24 replicates, because it is recognized that soil is highly variable with reference especially to the internal movement of water. The authors have used tubes 8 by 14 inches in size and applied water apparently for 8 hours or more. We have used,\(^2\) normally, tubes 9 by 18 inches or 9 by 24 inches, depending upon soil characteristics, with the objective of reaching into a less permeable horizon, and have applied water for periods of 3 to 3½ hours. Obviously greater movement of subsurface water would be expected under the former than the latter procedures.

Subsurface lateral movement of water, we believe, occurs to some extent, in certain soils at least, with any method of applying water to a small plot. Evidence of this has been found in our work with rainfall simulators of various kinds and sizes, with concentric rings, essentially similar to those reported by the authors, and with tubes. As between the latter two methods, the standard deviation normally has been lower in any series of determinations where the core is encased than in a corresponding series where it is open, as with concentric rings. In a series of experiments recently completed replicated determinations by each of four different kinds of infiltrometers were