

The Secretary,
The Institution of Civil Engineers.

DEAR SIR,

In the Appendix ("Estimation of the age of a red clay soil from weathering data") to their Paper "Structure of red clay soil from Kenya" (*Géotechnique*, 14:3:262-276), Coleman, Farrar and Marsh state that the geological evidence available (Shackleton, 1945) suggested an age for the red clay soil of between 10^5 and 3×10^7 years.

Referring to the cited publication by Shackleton, the red soils of the Nyeri area are included in a group of Pleistocene and Recent superficial deposits. Since the Pleistocene is generally regarded as beginning one million years ago, the geological evidence would appear to suggest that the upper age limit of the red clay soil is 10^6 years rather than 3×10^7 years.

I should like to know how the Authors deduced the figures for the age of the red clay soil quoted in their Paper, from the geological evidence.

Yours faithfully,
A. N. Burton

Hunting Technical Services Limited,
Boreham Wood, Herts.
18 January, 1965.

REFERENCE

SHACKLETON, R. M., 1945. "Geology of the Nyeri area," *Geological survey of Kenya, Report No. 12.* (Government Printer), Nairobi.

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DEAR SIR,

Rowe, Barden and Lee (1964) were no doubt speaking for a number of readers of our recent work (Roscoe, Schofield and Thurairajah (1963) and Roscoe and Schofield (1963)) when they ask on p. 256, "How does $(\delta v)_s$ arise?" May we apologize for the lack of clarity in our previous presentation and attempt to correct an evident misapprehension.

We shall continue with our previous symbols and sign convention in which *compressive* stresses and strains, and *increase* of voids ratio, are positive. The superfixes p and e refer to plastic and elastic components of strain, consequently δv^p is equivalent to Rowe's $-(\delta v)_s$. We neglect the elastic component of shear distortion so that $\delta \epsilon = \delta \epsilon^p$.

When considering our energy equation

$$p\delta v + q\delta \epsilon = \frac{\kappa\delta p}{1+e} + M p \delta \epsilon \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

we are accustomed to think of the terms on the left-hand side as representing a small quantity of work flowing across the boundaries of a soil element, which is in an initial state (p, q, e) , during the application of a small probing stress increment defined by the components δp and δq . This stress increment causes a corresponding increment of total strain represented by components δv and $\delta \epsilon$. It is important *not* to associate separately δp with δv and δq with $\delta \epsilon$. The terms on the right-hand side of equation (1) represent the use to which this work has been put; the first term corresponds to a small change in the store of elastic energy within the element while the second term represents a small quantity of work dissipated internally. The