HEAVY MINERAL FREQUENCIES.

SIR,—I have noted with interest the suggestion made by Mr. W. F. Fleet in his valuable paper in the November number of the GEOLOGICAL MAGAZINE (p. 505), for a more accurate representation of heavy mineral frequencies in petrographical work. In the course of recent work on certain sands I have followed similar methods, but have found it necessary to take further precautions in interpreting frequency determinations. Mr. Fleet suggests that the percentage frequencies he gives are "exact representations of mineral frequency". This is, of course, true of the slides examined, but it is not necessarily true of the whole of the heavy mineral residue unless the latter has been carefully sampled or mounted entire.

Mr. Fleet also suggests in his summary and conclusions (p. 513), "that a similar calculation of percentage figures on the minerals of such deposits may assist in indicating more definitely the sources from which they have been derived." A study of simple percentage frequencies will not necessarily lead to accurate results in this direction, for what is desirable is the actual amount of the various minerals *in the rock* and not simply their frequencies in the heavy residue. For this purpose the percentage weight of heavy residues should be given when of weighable proportions. It is a great help also in the interpretation of results if the sizes of minerals are incorporated in the frequency table. A frequency of 20 per cent. for grains of 0·1 mm. has a different meaning from the same frequency for grains of 0·05 mm. This is a great objection to the averaging of percentage frequencies, unless the grade sizes are at least approximately the same. A table such as that given at the bottom of p. 509 would aid interpretation of the results much more if some standard method could be adopted to indicate the average sizes of the minerals alongside the frequency numbers such as dots or squares of fixed sizes representing the grading into small, medium, large, and very large. (Footnote, p. 512.)

ALAN STUART.

UNIVERSITY COLLEGE OF SWANSEA.
11th November, 1926.

AN UNNAMED MINERAL OF THE OLIVINE GROUP.

SIR,—In 1906 J. P. Paul (*T.M.P.M.*, vol. xxv, p. 308), in investigating a series of alkaline rocks from Tasmania, described an endialite-nepheline-basalt from Shannon Pier, Shannon District, Tasmania, containing a comparatively large proportion (13·7 per cent) of a new mineral which chemical determinations proved to be high in lime, free from magnesia, and readily attacked by very dilute HCl. This mineral Paul decided was probably Ca_2SiO_4. In the same year Day, Shepherd, and Wright (*Amer. J. Sci.*, vol. xxii, p. 295) described the three crystalline forms of calcium orthosilicate,

but until quite recently Paul's discovery has been almost entirely overlooked by petrologists. Not till Bowen in 1922 (*Amer. J. Sci.* (5), vol. iii, p. 30) pointed out the close correspondence between the optical properties of the mineral described by Paul and the artificial β Ca_2SiO_4 was attention prominently drawn to this interesting occurrence.

	Cleavage.	α	γ	2 V	Sign.
β Ca_2SiO_4 . . .	parallel to prism axis	1·717	1·735	large	+
Tasmanian mineral .	2 olivine-like	1·718	1·746	64°	+

Paul gave no name to the mineral thus determined, and it is probably for this reason that it escaped notice in later years.

In view of the almost certain correspondence between the mineral and β Ca_2SiO_4, some precise name is clearly wanted for this naturally occurring compound. The terms "Kalkolivin" and "limeolivine" are obviously not unambiguous as they have long since been used by earlier workers (whether justifiably or otherwise) for lime-bearing chrysolites or even monticellite-like olivines. Were it not that "Paulite" is already preoccupied for a rhombic pyroxene, this name might with justice be affixed in honour of the discoverer who has given us so excellent an account of the petrography of the Tertiary alkaline rocks of Tasmania.

It may be permitted to suggest for this mineral the name *Shannonite*, after the district from which it was first recognized and described.

C. E. Tilley.