and the system of 'magma-types' is explained and a full list of these is given.

The next chapter, 150 pages, deals with the 'Equivalent Norm' and the calculation of the 'Basis' components and the sequence in which they are to be calculated to arrive at the standard catanorm. The same three rock analyses as were used to illustrate the use of Niggli values are again used throughout this chapter.

The equivalent norm is perhaps the most useful of Professor Niggli's introductions to arithmetical petrography. The author here shows how variants of the standard catanorm can be readily calculated. This is particularly useful in the study of the metamorphic rocks by the calculation of the epinorm and mesonorms. Graphical methods of displaying the chemical and potential mineral compositions of analysed rocks using the Q-L-M and the Mg–Fe–Ca triangular diagrams are well illustrated by examples.

In a short, final chapter the author describes the calculation of wt. % of oxides to cation % as advocated and used by Barth and Eskola, and Barth's proposal for a standard 'cell' of 160 oxygens is discussed. The clearly printed tables at the end of the book enable both molecular and atom proportions for the principal rock-forming oxides to be read off rapidly, and another list gives the conventional formulae of the compounds used in the 'Basis' and 'Equivalent norm' calculations and of the equations which have been devised for their conversions.

W. C. S.

BROWN (G. M.) and NOCKOLDS (S. R.), managing editors. *Journal of Petrology*. Oxford University Press, 1960, vol. 1, no. 1.

This is a new journal, and the aim of the editors is to provide a place for the publication of original researches in the whole range of subjects which fall within a liberal definition of petrology. The subjects will include the physics and chemistry of rocks, their mineralogy and textures, and certain aspects of petrology involving the dating of rocks by natural radioactivity. Quantitative studies of rock-forming minerals, experimental physical chemistry relevant to petrology, and isotope geology will also be included, though regional studies will not be covered unless they lead to results fundamental to petrology as a science.

The journal is printed on a 10 by 7 in. page with a type area of 8 by 5 in. and is expected at first to run to 400-page volumes consisting of three numbers per year, published in February, June, and October.

The subscription price for three consecutive numbers is 80*s.* ($12) post free; single numbers 30*s.*

SMITS (D. W.), editor. *World Directory of crystallographers and of other scientific officers employing crystallographic methods.* Utrecht (Published for the International Union of Crystallography by N. V. A. Ooshoek), 1960, 2nd edn., 134 pp. Price U.S. $1.50.

This second edition of the list first published in 1957 as Philips Laboratory Contribution No. 115 (edited by William Parrish), contains information on about sixty per cent. more persons and includes the complete membership of the American Crystallographic Association, which Association is not now issuing a separate membership list. Each entry gives the full name, date of birth, highest degree, appointment held with the address of the institution and telephone number, together with the chief crystallographic interest of the person concerned. The representation varies rather widely from country to country because the border-line has been differently drawn, as is shown by the numbers of persons included for U.S.A., 879, U.K., 492, and U.S.S.R., 172. Although a few countries that should be represented have failed to make the necessary returns, fifty-four are included, two more than in the first edition. An interesting addition is notes on the degrees awarded in several countries and their approximate equivalents. It may be anticipated that this list will prove even more useful than its predecessor and it is to be hoped that it will be found possible to continue the series at three-yearly intervals to coincide with the meetings of the International Union of Crystallography.

G. F. C.