The author tells us in the Preface that the principal objective of this work is to provide a guide to the petrographic character of the commoner texures and assemblages of minerals found in a group of alkaline rocks of interest to both academic petrologists and exploration geologists. The economic interest of course is that the first three rock types are primary sources of diamond but since the diamonds are considered to be xenocrysts, further comment on their occurrence is not relevant in this work.

Not all readers of this Journal can be expected to have an extensive knowledge of the great variety of names which have been given to rocks over the last 150 years by enthusiastic petrographers. In Tomkeieffs *Dictionary of Petrology* there are 173 names given to rocks which could be described as basalt but it is hoped that few scientists will be as ignorant as one of that increasingly popular species of what are known as interior designers, who recently announced on television that if granite, used as a decorative stone, is highly polished, it is called marble. However even petrologists who are not specialists in these particular rock groups may be forgiven for not knowing what an 'orangeite' is. The first eight pages of this book consist of notes on the terminology used and definitions of the rock types described. It was in 1928 that P.A. Wagner suggested that 'micaceous kimberlites' should be called 'orangeites' and Mitchell (1995) revived this name in preference to calling them 'group II kimberlites' which some other investigators prefer.

'This Atlas is a very useful companion to many of the recent publications of Roger Mitchell, particularly three text-books, on these unique and fascinating rocks and their mineralogy. In this respect it could be considered as directed to a very specialized readership, but I believe it may have an equally useful function as an aid to teachers of petrography and to petrologists in general. I do not know how many geology departments in the U.K., or for that matter in any other country, have sufficiently good rock collections to illustrate more than one or two examples of even kimberlites or melilitites. It is a great pleasure for me personally to see thin-sections of rocks from well known localities, of which one has heard but never seen, and from localities which are entirely new to me.

Of the 400 illustrations, 188 are of kimberlites, 62 orangeites, 84 lamproites, 50 melilitites and 16 minettes. The photographs are the best reproduction of photomicrographs which I have seen anywhere and they were produced from 35 mm transparencies. The magnification chosen by Mitchell is just over four times that of his transparencies and I believe that his choice of 100×150 mm prints is the main reason for the considerable impact of this beautiful collection of photographs; it goes without saying that the original transparencies had sharp focus and uniform lighting.

There is one unfortunate result of adhering to this large size for the plates and that is the explanatory text for each photograph has had to be assembled at the end of the book occupying 34 pages; only one line of text is printed under each photograph and this gives the name and the locality from which the specimen was obtained. I found it most inconvenient to have to search for the page on which the description of a specific photograph is given and I therefore obtained Xerox copies of these pages of text and cut them up into groups of four to insert between adjacent leaves of colour photographs. There are two solutions to this problem, one of which is to reduce the size of only those photographs which have descriptions too long to fit into the space available, but I believe that this is rather difficult for the page designer and the printer. The other solution is to reduce the size of all the photographs by the required amount to accommodate the length of the longest section of text which in this case is about seven lines: this will of necessity result in some large blank spaces. This reviewer and his co-authors have been unable to think of suitable caustic replies to critics, who on observing large blank spaces adjacent to illustrations in our books, have enquired whether these spaces are to accommodate corrections to the text by the reader.

This reviewer is not familiar with prices of books in Canada or the U.S.A. at the present time but for a publication containing so many excellent colour photographs it seems a very reasonable price to pay. It can be obtained from the publisher directly for US$100 plus US$10 for postage.

W. S. MacKenzie

Comin-Chiaramonti, P. and Gomes, C. B. (Eds). *Alkaline Magmatism in Central-Eastern Paraguay; Relationships with Coeval Magmatism in Brazil.* São Paulo (Editora da Universidade de São Paulo) 1996, 458 pp. ISBN 85-314-0326-6.

South American alkaline rocks seem to be the flavour of the decade and here is a volume bulging with data. Half is comprised of just three appendices of tabulated rock and mineral geochemical data. Of the 307 rock analyses presented, 220 are from lavas and dykes. This is a useful database.

Ten years ago a team of 28 Brazilians, Italians and Paraguayans plus three Australians from Geotrack International set out to investigate the geology, petrology, mineralogy, geochemistry and palaeomagnetism of the Mesozoic to Tertiary magmatism of, eastern Paraguay in the central-western side of the Paraná Basin, and to present their results: this memoir. The first two chapters are reviews, then three on seismicity, fission track analysis and palaeomagnetic data, two on petrography and rock chemistry, three on mineral chemistry, three on the Sr-Nd isotopes, geochemistry and petrogenesis of the magmatism particularly the potassic events, one on the isotope and trace element geochemistry of the carbonatites and a final chapter integrating the Paraguayan magmatism with that in adjacent regions.

The study area covers 160,000 km^2 and is bordered by the Paraná, Paraguay and Apo Rivers. It embraces 38 alkaline complexes which are usefully summarised and listed at the beginning of Appendix I. Several are newly identified since Alan Woolley's 1987 compendium (M.A. 87M/5449). The complexes are divided into three provinces: 1) Alto Paraguay Province in the north, ~200–250 Ma; 2) Amambay Province in the north-east, 120–130 Ma; 3) Central Province with an eastern portion ~100–130 Ma and the remainder 40–70 Ma. Rock types include picrobasalt, basanite, phonolite, ijolite, nepheline-syenite and carbonatite.

The excellent trace and *REE* geochemical data given in the appendices and dispersed in the chapters are plotted in every conceivable 2-, 3- and multi-element variation diagram, and the first 200 pages make heavy reading although they do provide a thorough lay-out of the information available. They establish the facts of the surface geology together and the nature of early tholeiitic activity contemporaneous with and followed by the sodic and potassic alkaline and carbonatitic magmatic events. Much emphasis is placed on the potassic rocks, some being strongly potassic (K_2O >7 wt.%). Two potassic suites are distinguished, a basanite-phonolite suite and an alkali basalt-trachyte suite. High-Mg primary magmas are inferred, but apparently failed to reach the surface from the deduced 3% partial melt enriched garnet-peridotite source.

In the later more petrogenetic chapters where the Sr-Nd isotopes systematics are analysed in conjunction with the broader geology and petrology, a well-constrained model is given of rifting of the South American plate leading to its thinning followed by increased heat flow and uplift of the Paranaiba and other arches. The Sr-Nd isotopes point to model ages of 1.4–1.8 Ga for the subcontinental mantle source which was enriched by incipient melts rising from the asthenosphere, and a good case is made for the subsequent thinning of the lithosphere and increased heat flow that permitted partial melting of the amphibole-phlogopite-carbonate-veined lherzolitic lithosphere to produce the potassic and carbonatitic magmas from the lithosphere so affected.

The two chapters centred on the isotope geochemistry are particularly well-presented and their first author Castorina must be complimented. So must Comin-Chiaramonti who first- or second-authored most of the other chapters. The highly-structured nature of the presentation enables the reader to dip in at any point in the text and quickly appreciate what's going on. There are thankfully few acronyms and other abbreviations to distract the reader. The abundant diagrams, some a trifle over-complex or over-crowded, nearly all have good explanatory captions which makes scanning of the pages rewarding. Typographic errors are few. The authors are to be congratulated on achieving their aim of a memoir telling the petrological world all about Paraguayan alkaline igneous rocks. It certainly will make a useful addition to library shelves. M. J. LE BAS