BOOK REVIEWS

BURNS (ROGER G.). *Mineralogical Applications of Crystal Field Theory*. London and New York (Cambridge University Press), 1970, xiii+224 pp., 67 figs., 2 pls. (1 coloured). Price £4·00 (U.S. $13.50).

This is one of the first titles to appear in the new Cambridge Earth Science Series, and it augurs well for the success of the series that the publishers have produced an attractively laid out book with an abundance of clear illustrations of generous size. The price is reasonable, although it is difficult to see why American readers should be expected to pay $13.50 for a book that sells at $9.60 in the U.K.

Three introductory chapters cover basic crystal field theory, energy level diagrams, spectra of transition metal compounds, and selection rules. There is also a brief discussion of experimental techniques used in measuring absorption spectra, and of the interpretation of absorption spectra to yield information on oxidation state, coordination, and site preference of transition metal ions.

The central section of the book is devoted to a comprehensive and particularly well illustrated account of mineral spectra. At this relatively early stage in the development of the subject it is perhaps unfair to expect definitive interpretations of the spectra, and the reader should remember that energy level diagrams such as figures 5.3, 5.5, and 5.8 may yet suffer considerable revision. The same reservation applies to a number of interpretations offered in the text, e.g. it is scarcely likely that $Fe^{2+} \rightarrow Al$ charge transfer will occur at energies similar to those required for $Fe^{2+} \rightarrow Fe^{3+}$ charge transfer, as implied on p. 69.

The remainder of the book is best described as a set of essays on transition metal geochemistry. The subjects include the crystal chemistry and thermodynamic properties of transition metal compounds, trace element geochemistry, and the application of crystal field theory to the properties of the mantle and to sulphide mineralogy. These essays are well worth reading, although some of the arguments again need to be approached with a degree of scepticism, especially the treatment of trace element distributions in § 8, and that of spin-pairing transitions in § 9.

Those who are familiar with the author's previous work in this field will discover relatively little that is new in this book, but they will none the less find it invaluable both for its extensive bibliography (to the end of 1968) and as a source of data on mineral spectra and properties. This book should certainly be bought by all earth science libraries, and it will doubtless become recommended reading for the majority of postgraduate and advanced undergraduate students of mineralogy and geochemistry.

R. G. J. STRENS

NICOLINI (P.). *Gîtologie des concentrations minerales stratiformes*. Paris (Gauthier-Villars), 1970. 792 pp., 193 figs., 41 tables and maps, 39 photos. Price 190F.

At the outset the author tells us how he has come to add a new word to the French language (I translate): Impelled by the heads of European schools: G. C. Amstutz