

After the short introductory chapter, Chapters 2 to 4 consider respectively the chemistry, phase relations, and geochemistry of the platinum-group elements. These provide a solid grounding in the properties and abundances of these elements from which the following six chapters on the study and properties of the known Pt-group minerals logically follow.

Sample preparation and analytical methods are dealt with in Chapters 5 and 6 while the substantial Chapters 7 and 8 contain the mineralogical data under three broad headings—X-ray crystallographic and density data, ore microscopy, and analyses of named minerals. The second section is the largest, providing a useful compilation of reflectance spectra for most of the minerals. The splitting of data here into three sections could prove troublesome in that much extra searching is required to extract, for instance, the chemical analysis pertaining to a specific reflectance spectrum. Nevertheless the information is all there and the authors are to be congratulated on their achievement in collating so much information on a rapidly developing subject. Numerous illustrations, both of polished sections (including sixty in colour on three plates) and of scanning electron micrographs, are included. Doubtful, discredited, or incompletely characterized *named* species receive very short shrift—none of their optical or chemical properties are given, and they do not appear in the index. However unnamed minerals receive much more lavish treatment, with a separate chapter and full individual discussion.

The final two chapters deal with platinum-group element deposits and recovery of the elements from their ores, completing a very comprehensive survey of the subject. The book is going to be essential to all workers concerned with these minerals and their deposits, and the price seems reasonable.

A. M. CLARK

Neumann, H.-J., Paczynska-Lahme, B., and Severin, D. *Composition and Properties of Petroleum*. New York (Halsted Press) and Chichester (John Wiley and Sons Ltd.), pp. 137, 79 figs. Price £9.50.

This Volume 5 in the series *Geology of Petroleum*. It is divided into four parts covering (1) composition, (2) analysis, (3) properties, and (4) classification of petroleum, natural gases and oil-field waters.

Part one begins with the chemical components of petroleum and natural gas and helpfully gives both European and American terms. Gas hydrates are summarized in a page, and there is a short but comprehensive section on the composition of oil-field waters. The first part of the book concludes

with a section on the chemical aspects of the origin of petroleum and natural gases. Unfortunately this section, which should be interesting to geologists and mineralogists, has been condensed and omits mention of most modern research.

The second part of the book is a comprehensive summary of the different methods used in the analysis of crude oils. In the third part the properties of petroleum are described, initially in terms of phase behaviour and then finally in the reservoir. Although this treatment has obvious parallels with works on reservoir engineering (as in volume 3 of this series) the presence of this subject may prove useful to the reader who is not otherwise concerned with reservoir engineering.

The last part of the book on classification of petroleum, natural gases and oil-field waters containing useful information in a condensed form.

This may prove to be a useful reference work. It is somewhat hindered by the translation which, although understandable, has ungainly patches. The interesting glossary includes the German terms for the various entries.

H. C. POTTER

Evans, A. M., Editor. *Metallization Associated with Acid Magmatism*. Chichester and New York (John Wiley and Sons), 1982. xiv + 385 pp., 155 figs., 7 sketch-maps. Price £21.00.

This volume contains twenty-six papers submitted for the International Symposium on Problems of Mineralization Associated with Acid Magmatism held at Exeter University in December 1979.

The majority of the papers presented deal with tin and tungsten mineralization and the petrology and evolution of granitic plutons with which it is associated, several of them being concerned with south-west England. The behaviour of tin during granite differentiation is discussed by M. Stone, based on studies on the Tregonning-Godolphin granite, and hydrothermal activity in the St. Just area of west Cornwall is analysed by N. J. Jackson *et al.* who conclude that the principal ore-bearing main stage fluids were overwhelmingly of meteoric origin and mainly of low to moderate salinity (10–20 eq. wt. % NaCl) in the minimum ture range 280–450 °C. Tourmalinization in Cornwall is discussed by B. Charoy and also by P. Allman-Ward *et al.* and mineralization zonation near the granite batholiths in both Cornwall and northern England is compared by J. McM. Moore who advocates the concept of multiple generation of single-pass hydrothermal convective cells. J. P. N. Badham compares tin and copper mineralization in felsic igneous rocks and asks where the tin exhalites are. Other European tin and tungsten