

BOOK REVIEWS

Laverov, N. P. and Distler, V. V. (Eds) St. Petersburg & Athens (Theophrastus Publications) *International Platinum*, 224 pp. US \$69 (post-free). ISBN 5-88-143-051-4

This is a publication which arose from the 7th International Platinum conference held in Moscow in 1994. It contains contributions from an international collection of top platinum-group element (PGE) geologists.

The volume is divided into two parts. Part I is entitled 'PGE in Abyssal Magmatic Processes' and deals with PGE in igneous complexes ranging from the major economic PGE-producing complexes such as the Bushveld in South Africa and Noril'sk in northern Siberia to lesser PGE-enriched layered complexes and ophiolite complexes. There is an emphasis on PGE in layered intrusions in the Kola Peninsula which formed the focus for the pre-conference fieldtrip and the volume contains a useful collection of PGE papers for these areas, written by the Russian field excursion leaders and a Finnish group including Heikki Papunen. There is also an excellent review paper on modelling of the Noril'sk complex, the location of the post conference fieldtrip, with an international group of authors including Tony Naldrett's Canadian team, Z. Johan from BRGM France and their Russian colleagues.

Some of the other highlights in part I are a paper by A. Rice on the modelling of PGE deposits where he argues that major world PGE deposits require thick ultramafic units, and a paper by R. Merkle on a description of platinum-group minerals (PGM) in the UG2 of the Bushveld. D. Ohnenstetter and D. Watkinson examine the low temperature evolution of PGM in the Two Duck Lake intrusion in Canada with precipitation of arsenides and sulpharsenides at intermediate, but post-magmatic temperatures, followed by low temperature formation of tellurides and antimonides and then PGE-bearing alloys. There is also a very valuable paper describing the distribution of PGM in the New Caledonian ophiolite complex by Augé *et al.* The balance of papers in this part of the volume is approximately 50% Russian and 50% western.

Part II is shorter, containing five papers by Russian authors and one paper by S. Augustithis,

from Greece, on placer PGM from Yubdo in Ethiopia. In this part, Russian authors tackle PGE deposits in geological environments not typically recognized for hosting major PGE concentrations, such as black shales. There is also a paper on placer PGM from Konder, Siberia.

The book is well illustrated with many tables, diagrams and plates; it contains an abundance of mineralogical data with lists of PGM associated with different complexes and a considerable number of photomicrographs of PGM from igneous host lithologies and placer settings. This volume contains a number of very valuable contributions to the PGE and PGM literature and should be in all PGE specialists' book collections.

H. M. PRICHARD

Grady, M. M., Hutchison, R., McCall, G. J. H. and Rothery, D. A. *Meteorites: Flux with Time and Impact Effects*. London (Geological Society Special Publication 140) 1998. x + 278 pp. Price £69.00. ISBN 1-86239-017-7.

The Earth has always been pelted by high-velocity projectiles from space. The significance of this bombardment for the course of geological history has been amply demonstrated in recent years by the discovery that the end-Cretaceous extinction event correlates with a world-wide layer of iridium-rich impact ejecta and an enormous crater in Mexico. The discovery has captured the popular imagination, and it is now widely 'known' that an asteroidal impact explosion killed off the dinosaurs and, moreover, that future asteroidal impacts pose a very real threat to human civilization.

But is this newly acquired 'knowledge' supported by reliable evidence? Was the demise of the dinosaurs really caused by the enormous impact event or was it going to happen anyway? How much extraterrestrial material arrives each year, and what is its size distribution? Has debris from space been delivered to Earth at a constant rate over geological time? What exactly happens when a large body strikes the Earth's surface?

This book provides authoritative answers to these kinds of question. It is a collection of seventeen invited papers that were presented at