

more readily pocketable than the previous *Evolution of Fossil Ecosystems*. Four of the sites are duplicated between the two volumes but have been updated in the present book. Finally, I would recommend *Fossil Ecosystems of North America* to all palaeontologists as a very enjoyable and very well illustrated guide to sites that most of us will never be able to visit.

Douglas Palmer

Reference

SELDEN, P. A. & NUDDS, J. R. 2004. *Evolution of Fossil Ecosystems*. London: Manson Publishing, 160 pp.

HARPER, D. A. T. 2006. *Brachiopods from the upper Ardmillan succession (Ordovician) of the Girvan District, Scotland. Part 3*. Palaeontographical Society Monographs **159** (no. 624), pp. 129–87; plates 23–33. London: The Palaeontographical Society. Price £70.00 plus p+p (paperback). ISSN 0269-3445. doi:10.1017/S0016756808004846

This is the third part of a monographic treatment of the latest Caradocian–Ashgillian brachiopods of the Girvan District. Harper is one of the leading students of Ordovician brachiopods, together with Leonid Popov (Cardiff), L. R. M. Cocks (London), Rong Jiayu and Zhan Ren-bin (Nanjing), and Luis Benedetto (Cordoba, Argentina). This treatment describes 25 rhynchonelliform genera, including one new genus, six new species and two new subspecies. The beautiful illustrations make it much easier to deal with the morphological characteristics of the Girvan Late Ordovician brachiopods. The taxonomy is carefully tied into the local stratigraphic succession, with due attention paid both to the changes in stratigraphic nomenclature used in the Girvan District over time, and also to the local, Girvan distribution, with localities tied into a geological map indicating the local structural situation. Attention has also been given to the biogeographic character of these Late Ordovician shells, with their overall more offshore Laurentian character.

Sample size is provided for all taxa. Careful consideration has been given to the many earlier works dealing with Girvan Late Ordovician brachiopods; prior taxonomic assignments are given for the varied taxa. Up-to-date references are provided for each taxon, and a complete taxonomic index of the brachiopods dealt with in all three parts of the monograph is provided, together with current age assignments.

A. J. Boucot

CHAPMAN, M. (ed.) 2007. *The Geology of Mars. Evidence from Earth-Based Analogs*. Cambridge Planetary Science Series. xiii + 460 pp. Cambridge, New York, Melbourne: Cambridge University Press. Price £75.00, US \$135.00 (hard covers). ISBN 9780 521 83292 6. doi:10.1017/S0016756808004809

Understanding geological process on Earth is fundamental to understanding those on most other planetary bodies. Equally, geological studies on other planets where physical conditions such as gravity and atmospheric pressure (or lack of it) may be different, provide testing grounds for physical models of processes that occur on Earth. This is particularly true of Mars where many processes familiar to Earth-based geologists have moulded its surface. Mary Chapman, a US Geological Survey-based scientist, is therefore to be congratulated on conceiving and bringing together this book of chapters on geological processes common to Earth and Mars.

The book is timely. After a long time gap between the NASA *Viking* mission that arrived at Mars in 1976, we are now embarking on a comprehensive programme of investigation of the Red Planet. *Viking* had the task of putting two spacecraft in orbit round the planet to make surface observations, and put two landers on the surface in an attempt to look for life. Large though this database is, it was all there was to work on for those involved in Martian studies. Now we have data from new orbital missions from both NASA and the European Space Agency, together with highly successful NASA landers, capable of roving across the surface to investigate the geology.

The first chapter sets the Martian scene with some of the latest discoveries on the surface geology from these recent missions, and identifying questions for the future. A chapter on impact craters comes next, and although most of Earth's craters have been eroded and do not show pristine surfaces, here we have the opportunity to examine them from those in almost perfect condition like Meteor Crater in Arizona, to those that are deeply dissected exposing their internal structures.

Volcanism takes up six chapters. Mars has some huge volcanoes each of which has a summit caldera complex: observations of terrestrial volcanoes are introduced to attempt to interpret those of Mars. The New Mexico (USA) volcanic field is rich in volcanic landforms and provides many analogues that provide a basis for understanding Martian volcanism, and flood lavas on Earth also provide clues to mechanisms of emplacement of flows often much larger than those on Earth. Finally, on the volcanic front, do rootless volcanic cones in Iceland have analogues on Mars?

Six chapters discuss analogues of aeolian-, lacustrine- and gravity-induced processes. Sand dunes and deposits in the western United States are seen in relation to Mars. Greenland, with its periglacial conditions, is seen as a suitable location for interpretation of Martian hillslope debris flows. Two chapters cover fluvial erosion comparing those of Mars with valleys and cataclysmic flood channels on Earth; and a third chapter considers terrestrial plays as possible analogues for some Martian surface features.

In further chapters, meteorites are used to identify Martian rock compositions, and the Canyonlands (USA) provide analogues for graben. The search for life on Mars is still high on the scientific agenda and lakes in the high Andes have been studied in an astrobiological context. Finally, the importance of analogue studies for planetary exploration by humans and robots is emphasized. A thought-provoking book – highly recommended.

John Guest

JEANS, C. V. & MERRIMAN, R. J. (eds) 2006. *Clay Minerals in Onshore and Offshore Strata of the British Isles: Origins and Clay Mineral Stratigraphy*. Reprinted from *Clay Minerals – Journal of Fine Particle Science* (2006), Volume **41** (1), pp. 1–550. London: The Mineralogical Society of Great Britain and Ireland. Price £70.00 (members' price £49.00); hard covers. No ISBN; ISSN 0009-8558. doi:10.1017/S0016756808004767

This book is the long-overdue successor to the 1971 publication *The Clay Mineralogy of British Sediments* by R. M. S. Perrin, in which several decades of clay mineral research were for the first time collated and discussed within a stratigraphical framework.

The twelve contributors have produced a much more detailed and interpretative account in their ten chapters