BOOK REVIEWS

HOLLAND, C. H. & SANDERS, I. S. (eds) 2009. *The Geology of Ireland*, 2nd ed. viii + 568 pp. Edinburgh: Dunedin Press. Price £130.00 (hard covers), £90.00 (paperback). ISBN 9781 9037 6571 5; 9781 9037 6572 2 (pb).
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Every country needs one: an integrated, detailed and readable account of its geology. For over a quarter of a century, Charles Holland's book and its forerunners have filled this publishing niche for the island of Ireland. The book was first published in 1981 by Scottish Academic Press as *A Geology of Ireland*, then rewritten and expanded for 2001 as the more assertive *The Geology of Ireland*, published by Dunedin. It is impressive to see a new edition published only eight years later, particularly as, once again, it is a substantially altered volume.

The organization of the volume broadly follows that of the first edition, with fifteen chronological chapters preceded by an introduction and followed by chapters on offshore geology, onshore geophysical evidence, and the history of Irish geology. There has been some tinkering with the chapter order and scope. The Ordovician of the north is now dealt with separately from that of southern Ireland, and – a little uncomfortably – before the chapter on the Grampian Orogeny. The chapters on late Caledonian orogeny and magmatism are combined. The onshore geophysics chapter moves from before the Cenozoic material to after the Holocene chapter.

There have also been changes in chapter authorship. Ian Sanders acts as co-editor with Charles Holland, and as a co-author on the introduction and geophysics chapters. David Chew takes over the Grampian and late Caledonian orogenies formerly described by Adrian Phillips. Chris Stillman helps John Graham with the southern Ordovician. Mike Simms takes over the Permian and Mesozoic and Steve McCarron joins Peter Coxon on the Tertiary and Quaternary. Richard Bradshaw's separate Holocene chapter has been taken over by Fraser Mitchell, and Pat Shannon partners David Naylor on the offshore geology. All the authors are from Irish institutions and, as in previous editions, the strong majority are from Trinity College Dublin. This local expertise gives a reassuringly authoritative flavour to the whole book.

The degree of revision of chapters from the first edition is naturally quite variable. Sampling of their new content suggests that most have been brought adequately up to date, for instance with citations to recent literature. The level of detail in the text makes it a useful reference source for the professional geologist, whilst still being accessible to university students and informed amateur geologists. More obvious than the revision of the text in this edition is the redrafting of most of the diagrams in colour and the colour replacement of the monochrome photos. This change certainly makes the book more visually appealing.

With this new edition, *The Geology of Ireland* continues as a valuable companion to the stylistically similar '*The Geology of* . . .' volumes on Scotland and on England & Wales published by the Geological Society of London. There is, however, a sizeable contrast in price: the Dunedin Irish volume is one-and-a-half times the cost of the Geological Society volumes in hardback and two-and-a-half times the cost in paperback. Hopefully this high cost will not markedly affect sales of a book that deserves to be widely used.

Nigel Woodcock

VELDE, B. & MEUNIER, A. 2008. *The Origin of Clay Minerals in Soils and Weathered Rocks*. xii + 406 pp. Berlin, Heidelberg, New York: Springer-Verlag. Price Euros 129.95, SFr 216.00, US $199.00, £103.00 (hard covers). ISBN 9783 540 75633 0.
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The authors are well known in the world of clay mineral science. Until recent times, they have been associated with a physico-chemical approach to the development of clay minerals. In *The Origin of Clay Minerals in Soils and Weathered Rocks* they demonstrate their late conversion to accepting that biological activity and organic chemistry may play an important role. This book is part textbook, part personal hypothesis, part message, written in the hope that 'some young people with stars in their eyes will heed this call, and we can proceed into the 21st century on a better footing than when we left the 20th'. There are a contents list, eight chapters, six annexes (i.e. appendices), a reference list, a general index and 195 figures (black/white) and 23 tables.

Chapters 1 and 2 deal with the physico-chemical properties and structure of clay minerals and the geochemical systems involved in the development of secondary clay minerals in weathered rocks and soils. Chapter 3 covers general controls on the formation of weathering profiles and soils, and Chapter 4 the details of rock–water interaction involved in the weathering of igneous, metamorphic and sedimentary rocks. Chapter 5 discusses the effects that vegetation and agricultural practice have on clay mineral assemblages. Chapter 6 covers the influence of climate and time on clay minerals in weathering profiles and soils, while Chapter 7 discusses physical movement of soil material within soil profiles and the development of topographically controlled catenas. The final chapter summarizes the authors' ideas on the future of clay mineral science in the use of soils in modern and future societies. Appendices provide additional information on clay mineral polytypes, mixed-layer clay minerals, cation exchange capacity, hydroxide inter-layer minerals, phase diagrams, and kinetics. The authors' approach is that soil development consists of three phases. Initially an abiological alteration of the parent rock is controlled by water–rock interaction. This may result in very varied but localized clay mineral alteration products. This is maintained until the physical structure of the rock collapses (saprock to saprolite) when consistent conditions become widespread and a more simplified clay mineral assemblage develops. The subsequent establishment of vegetation marks the third phase in which organic matter and biological activity play an important role in modifying the clay mineral assemblages. There is extended discussion of the productive soils of temperate climates and the effects of agricultural practice. There is reference to the authors' controversial views on the potassium and silica cycles and the development of soil mixed-layer clays and illite. However interesting, these ideas would gain more scientific credence if the authors