

BOOK REVIEWS

TWIDALE, C. R. 2007. *Ancient Australian Landscapes*. 144 pp. Dural, New South Wales: Rosenberg Publishing. Price £16.50 (paperback). ISBN 9781 8770 58448. doi:10.1017/S0016756809006098

Amongst other superlatives, Australians have traditionally thought of their land as the oldest continent, a conceit perhaps stemming less from an understating of the geology than from the timeless experience of the vast expanse of the sunburnt outback. Although the oldest terrestrial materials yet recognized certainly occur in the western cratons, most of the extensive sweeping Australia plains are of rather youthful origin and, until recently, received geomorphological wisdom would have argued that the repeated cycles of denudation over time must make preservation of older landscapes a rare phenomenon. In *Ancient Australian Landscapes* Twidale sets out to show that landscapes of considerable antiquity are in fact fairly common and indeed have been recognized as such by many workers whose observations have not always gained the recognition they merit.

'Landscapes' is possibly somewhat of a misnomer for many of the landforms described here. 'Surface', a term extensively used by the author, might be more accurate, but does not convey the feeling of scale which he clearly wishes. Merely local exhumations of unconformities do not count. Thus the fossil strand at Siccar Point on which James Hutton so delightfully danced his discovery jig on that summer morning of 1788 would hardly constitute a Devonian landscape, even though Hutton in his initial ecstasy might well have regarded it so. Because, in an eroding system, lowest levels represent the youngest stages, relics of older landforms tend to occur at higher levels. Characteristically they are seen as the extensive bevelling of the summits of mountain ranges. Impressive examples are recognized in a variety of areas around Australia, Twidale adducing the geological arguments for their antiquity as well as discussing the nature of the surfaces involved and advancing reasons for their preservation from as far back as the Permian.

Much of the material of this book has already been published in the professional literature. Here it is brought together and made available also to the non-specialist, supported by a lucid digest of the geological background and basic geomorphology as well as reflections on the philosophy of geological observation. Reaching out to a wider audience, the author in later chapters does seem to stray somewhat from his strict path, by dealing with some of the more picturesque geomorphological oddities familiar to many from the travel brochures if not from more intimate observation. Thus we find Wave Rocks, Pinnacles, Devil's Marbles, all however incorporated in the context of their age or of the landscapes in which they occur. Pre-eminent of course is Australia's iconic inselberg, Uluru (Ayers Rock), one chapter being devoted to a fascinating account of its evolution by chemical erosion from a small hill on a high plateau 60 million years ago, to its present residual splendour.

The striking features discussed in *Ancient Australian Landscapes* are well illustrated in colour and in monochrome, the book being produced to a high standard with clear large typography. It can be recommended to any geophile intent on travelling in the outback, whether in reality or in the mind's eye.

Graham Chinner

ZALASIEWICZ, J. 2008. *The Earth After Us. What Legacy Will Humans Leave in the Rocks?* xv + 251 pp. Oxford, New York: Oxford University Press. Price £14.99 (hard covers). ISBN 978019 921497 6. doi:10.1017/S0016756809006165

Though we all know that the present is the key to the past, *The Earth After Us* takes geological investigation one step further. By asking 'What precisely will mankind's legacy be 100 million years hence?', the book offers a unique and thought-provoking insight into anthropogenic climate change.

The premise is simple: a future race of geological explorers chances upon a widespread and charismatic event stratum and this, the prologue tells us, relates to a planet-wide environmental crisis and a widespread mass extinction. But such hyperbolae are swiftly set aside. This is not some wild fantasy about alien geologists (or indeed a future species of hyper-intelligent rock-studying rodent as Zalasiewicz wryly observes), instead it is well thought-out and rigorous, taking an almost Lyellian approach and using the principles of soft rock geology to investigating the role of Man in the Earth system.

This book, however, is not just a new window on the late Quaternary world. It offers a deep time perspective on current climate change set against the Earth's long history of evolution, extinction, ice ages and shifting seas. After setting the picture, the first few chapters lay the foundation of basic geoscience, introducing the concepts of tectonics, eustasy and stratigraphy in an entertaining account that draws together evidence for global change in a veritable whodunit of investigation and anecdote. From this the reader garners not only the background with which to address what hints of Man's brief reign may remain in the rocks, he or she is also equipped with a wealth of information showing the intrinsic link between life and environment on a dynamic, ever-changing planet. Having gained this knowledge of ancient climates and long-dead ecosystems, the narrative returns to the present to examine the anatomy of recent environmental change.

Here the story shifts: we are taken into a detective story of how a future race may infer the workings of the human world, perhaps to see how a widespread civilization wreaked climatic havoc on its own environment. The text examines first how short-lived climatic events may be recognized in the stratigraphic record, before making the case for the contemporary climate change being recorded in a series of ubiquitous event beds. The focus then shifts towards the Rosetta Stone that might link Mankind with its environmental impact using the principles of taphonomy and ichnology to assess precisely how we will be found in the fossil record. In the final chapters we see how the preserved workings of a low-lying flood plane city may leave vestiges of our organized civilization. The cemeteries of such cities being, of course, the final piece needed to link up the puzzle, concomitant with indirect evidence of Man the agriculturalist and Man the earth-mover found elsewhere in the strata.

This book provides an entertaining insight into the geological sciences. It will not only reach out to the general audience and the interested students meeting geology for the first time, it also conveys a broader message to the scientific community, showing clear evidence of Man's influence on the evolution of the global environment.

Alex Page