

Arid landscapes

Ken Pye

Desert Geomorphology. By Ron Cooke, Andrew Warren and Andrew Goudie. UCL Press: 1993. Pp. 536. £75, \$125 (hbk), £24.95, \$59.95 (pbk).

ALTHOUGH deserts cover about one-third of the Earth's land surface, only in the past few decades have they received their fair share of attention from Earth scientists. Desert research has recently been spurred on by the need to understand hydrocarbon reservoirs and surface conditions on other planets such as Mars, by concern about the effects of both natural and human-induced environmental change in drylands, and by the development of new technologies such as remote sensing.

The first synthesis of warm desert processes and landforms was Ron Cooke and Andrew Warren's *Geomorphology in Deserts* (Batsford, 1973), which became something of a classic. It is therefore appropriate that these authors have combined forces with Andrew Goudie to produce a new text that updates and extends the scope of its predecessor. The book combines an extensive review of the literature (the reference list contains some 2,000 entries) with examples drawn from the authors' own experiences in many of the world's deserts, including those of North and South America, the Middle East, Africa and the Indian subcontinent.

The five sections cover introductory global perspectives, desert surface conditions, fluvial processes and landforms, aeolian processes and landforms, and desert landform development. The ap-

proach is traditionally geomorphological, focusing on the nature of the Earth's surface processes and their relationship to landform development. Treatment of aspects such as weathering and the development of stone pavements, alluvial fans and dunes is thorough and original, but little attention is given to basin-scale and long-term controlling factors and interrelationships. Tectonic and structural controls on processes, sediment production, and landform evolution and preservation are given scant attention, and there is limited discussion of sub-surface hydrology and arid-zone lakes. Geomorphological evidence of climate change in warm deserts is reviewed and the history of the main deserts is outlined, but there is surprisingly little explicit discussion of the causes and mechanisms of environmental change in deserts. Equally surprising is the limited attention given to the use of geomorphological principles in desert environmental management.

The writing of a book with such breadth in a fast-moving field is an ambitious task, with material rapidly becoming out of date. Much of this text has the feel of a late 1989 vintage, with minor later additions. Nevertheless, *Desert Geomorphology* provides an excellent synthesis for undergraduate and postgraduate students in geomorphology and other branches of Earth science. It should also be an essential purchase for seasoned researchers and practitioners, for whom it will provide a useful source of background information and intellectual nuggets. □

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Theories and controversies

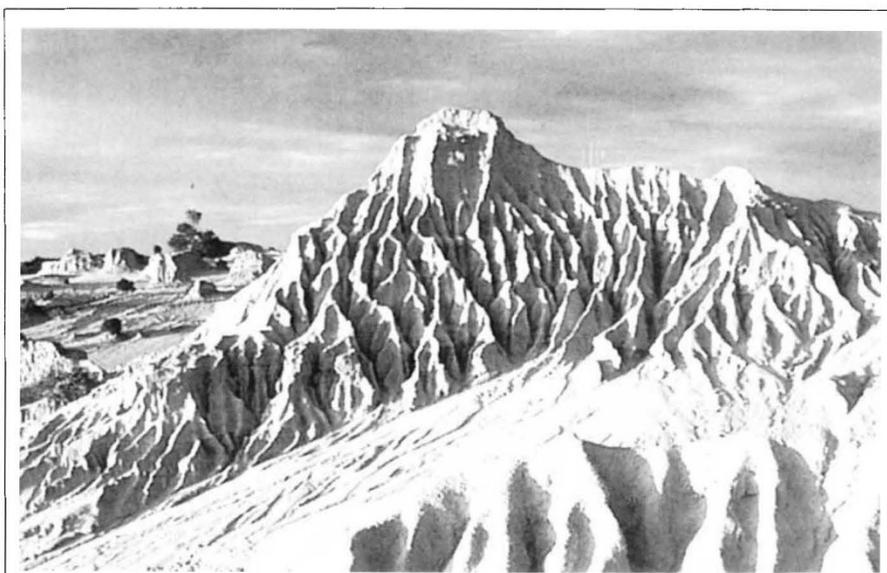
Christopher Wills

Evolution. By Mark Ridley. Blackwell Scientific: 1993. Pp. 670. £39.50, \$39.95 (hbk), £19.50 (pbk).

GOOD textbooks shape a field. They present up-to-date information in such a well-organized way that gaps in our knowledge become glaringly apparent. Alert students who read such books are driven to ask how these gaps might be filled in, and sometimes to ask even more fundamental questions about the field. The late Albert Lehninger's *Biochemistry* was such a text, as were James Watson's *Molecular Biology of the Gene* and E. O. Wilson's *Sociobiology*. I expect that Mark Ridley's new book on evolution will join their distinguished company.

Students who already have a good background in the biological sciences will get the most out of Ridley's book, which does not try to do everything. It is not an introductory text like M. W. Strickberger's *Evolution* (Jones and Bartlett, 1990), and it goes into more detail and more subjects than D. J. Futuyma's widely used *Evolutionary Biology* (Sinauer, 1986). The book is not heavily freighted with examples, and the examples that are used are highly selective, leading into complex and well-balanced discussions of evolutionary theories and controversies. This is the book's great strength.

Like Dante's Virgil, Ridley guides the well-prepared student through the many conflicting points of view that make evolutionary biology so daunting for the beginner. Calmly and at length, he weighs the various merits and demerits of nature versus nurture, Darwinism versus Lamarckism, group, individual, hard and soft selection. Along the way he adjudicates in the war between neutralists and selectionists, the three-way battle among cladists, phylogeneticists and evolutionary taxonomists, the 'slugfest' between gradualists and punctationists, and the quarrel among sympatric, parapatric and allopatric speciationists. There is even a glance at creationists, frozen in the ice of the lowest level. Their views are given more attention than I suspect they deserve, which may be due to the fact that Ridley teaches in a state (Georgia) that actually adopted a creationist biology textbook. Be that as it may, he patiently examines the logic underlying evolution, transformism and creationism, and his arguments for evolution as the most likely explanation for the diversity of life should convince



Ancient silty dunes, now dissected by water erosion, form the 'Walls of China' near the dry Lake Mungo in southeastern Australia. Taken from the well-illustrated and comprehensive *Deserts: The Encroaching Wilderness* edited by T. Allan and A. Warren. Oxford University Press/Mitchell Beazley, \$35, £19.99.