

## Desert landforms

*Geomorphology in Deserts.* By Ronald U. Cooke and Andrew Warren. Pp. 374. 80 plates. (Batsford: London, August 1973.) £5.50.

LANDFORMS in deserts, unobscured by vegetation and constituting the scenery, are remarkable for their abruptness and orderliness. Until recently there were few books in English concerned mainly with desert geomorphology. *Deserts of the World* by W. G. McGinnies *et al.* (Office of Arid Lands, University of Arizona, 1968) contains only one chapter on geomorphology; K. W. Glennie's *Desert Sedimentary Environments* (1970) is more specialised, but the volume under review rarely overlaps it.

The field experience of the two authors has been complementary. Cooke has published on pediments, gullies and desert pavements in North and South America. Warren has worked on soils and dunes in Pakistan and the Sahara.

Their book is in four parts. In the first the diversity of desert landforms is emphasised and different approaches to their study are assessed. The concepts of W. M. Davis are treated rather unsympathetically but the wonder is that his arid cycle has been treated so seriously; he obviously regarded it as a sighting shot. The authors themselves adopt a more fashionable systems approach, one which I think is not ideally suited to a subject in which discontinuity of operations is so marked.

Most of the world's deserts, even the southern Sahara, were not truly arid as recently as 5,000 to 15,000 years ago and before that their climates, at least through the Quaternary, fluctuated markedly. Such instability seems to me to present difficulties for a systems approach to the study of the resultant landforms. I am not convinced that the return period concept releases geomorphologists from the necessity of concerning themselves with paleoclimatology; the two must go together.

The soil surface system is the subject of part 2. It brings together very usefully a great deal of recent literature on desert soils. Part 3 deals with integrated patterns of change on slopes and in channels, and with features such as pediments, fans and playas. There should be more photographs illustrating these features. Pediments remain enigmatic; as with so many forms that attract attention, their vital statistics characterise without necessarily revealing their underlying nature.

In part 4, "Aeolian Systems," a couple of equations have somehow been missed out and there are a number of minor slips, but the section on dune patterns is very stimulating. It draws on the work of the late Ian Wilson and I hope

that Warren and others will pursue the subject further with the cooperation of aerodynamicists.

A. T. GROVE

## All immunology

*Handbook of Experimental Immunology.* Edited by D. M. Weir. Second edition. Pp. 350. (Blackwell Scientific: Oxford and London, 1973.) £22.50.

THE second edition of the handbook weighs 3,000 g, an indication both of the editor's assiduity and of the growth of immunology (37% increase in weight over the previous edition!). The utility of this monster will be revealed with time and the passage of many toil-stained fingers but even now deficiencies are clear.

The three sections of the book are labelled "Immunochemistry", "Cellular Immunology" and "Applied Immunology." Individual chapters are written in the main by people acknowledged by their peers as experts in particular fields. But it is already nearly two years out of date which in cellular immunology would by many be judged a crime. Even if it were up to date it is not comprehensive and this is particularly true of the applied immunology section. Hardly any of the current attempts to apply cellular immunological methods, experimentally, in clinical contexts or in studies of experimental infection are documented in the handbook; there is very little on application of the methods of rosette-forming cells, anti-theta analysis, cell electrophoresis, velocity or density sedimentation of lymphocytes and general surface antigens of lymphoid cells. Many methods are given in such detail as to duplicate other parts of the book. The many recipes for PBS phosphate-buffered saline are a case in point. Judicious editing might have avoided quite so much overlap and thereby reduced the expense. The index is the only form of cross-referencing between chapters which otherwise, and perhaps inevitably, seem to have been written in isolation.

On the good side are the very many chapters which do beautifully exemplify the contemporary immunological scene. The illustrations are good and clear almost throughout the book. There is a wealth of the folk-lore of immunological method honestly set down. The handbook is an heroic effort but its high price and the speed of change in immunology combine to make it as far as its cellular immunological parts are concerned a white elephant.

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## Black holes expand minds

*Black Holes: The End of the Universe?* by John Taylor. Pp. 174. (Souvenir: London, October 1973.) £2.50.

IT is difficult to see this book as other than an attempt to pre-empt future science fiction writers by attaching a scare story of death and destruction to every aspect of black holes.

The book is glued together with long tedious passages discussing the significance of black holes to mankind and the author uses the first forty pages to make general remarks about the state of the world, religion, precognition, astrology and so on. He announces that America has cut oil supplied to airlines, that Heitsi-ebib, a god of the Hottentots, died several times, that when Huxley and Wilberforce argued on evolution Lady Brewster fainted, and many other gratuitous scraps.

Then black holes are introduced. The chapter starts "None of us wants to die, but death is with us whether we like it or not; sadly we have not yet discovered how to avoid it". For the next hundred pages the author wanders through various properties of black holes with an unerring eye for the spine chilling. "The pulverized mess that was [the astronaut's] remains would be crushed ever smaller". "The bones and muscles of his body will be elongated beyond breaking point". This is as unhelpful as would be a ceaseless emphasis in a book on plate tectonics, on the horrid death to be expected if one stayed on an oceanic plate at a subduction zone.

It would be difficult for a layman to appreciate whether the chapter on extracting energy is anything other than pure tongue-in-cheek. It would be equally difficult for him to grasp some of the concepts which are introduced in such an off-hand way—in phrases such as "Time passes very, very slowly for the first few billionths of a second (of the universe)" or "Light possesses energy and so has mass". Professor Taylor declares it "certain" that there is life elsewhere in the Universe and goes on to guess what it is like. The relevance of this to black holes is revealed in breathtaking manner when the biblical legends of Satan are interpreted as God casting Satan into a black hole (the "fiery furnace"). The Devil's horns "could indicate antennae" confirming that he came from distant parts of the Galaxy.

The author says in the concluding paragraph of the book that the black hole Universe affords "great opportunities to expand our vision of the world". Just so.

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