

# BOOK REVIEWS

## Running Out of Space

*The Making of an Ex-Astronaut.* By Brian O'Leary. Pp. xii+243+10 photographs. (Michael Joseph: London, April 1971.) £2.25.

How would you feel if, on turning up for a new job, you were told "We don't need you around here, at least not for the time being"? This was the welcome accorded Brian O'Leary and ten other would-be scientist astronauts when they reported for duty at Houston in September 1967. If it hadn't been for the gruelling effort needed to get the job—described by O'Leary in detail and with humour—and its miserably poor salary, you might expect at least a few of the XS11 (excess eleven) to give up on the spot. Nobody did, until Brian O'Leary quit just seven months later.

O'Leary gives two reasons for his departure. One is the tale of Dr Brian T. O'Leary, scientist and ex-astronaut (well, almost); and the other is of NASA's scientific programme.

As a person O'Leary is far from unique. He was just a bright youngster who was awed by space. When he was a youngster there was little chance of going into space, so he became an astronomer instead. "At Berkeley I became a professionally recognized planetary astronomer, a space-age breed who snoops around the solar system with unmanned probes and Earth-bound telescopes."

While O'Leary's humour keeps the book readable, *The Making of an Ex-Astronaut* gets more interesting when O'Leary arrives at Houston, an ecological disaster area if ever there was one. The astronauts live a remarkably dull life and, if O'Leary is to be believed, most of them are quite dull people. "There they were in sport shirts and crew cuts—the military pilots, only children, eldest children, mid-westerners, worshippers, Boy Scout leaders, hunters, aerophiles, and sports car racers." It may be this that has kept them out of the autobiography stakes rather than the restrictive Time-Life contract "which provides \$200,000 cash each year to be shared equally among astronauts and astronauts' wives in exchange for the sole rights to astronauts' stories".

The book really begins to hit home when O'Leary lays into NASA's cavalier attitude to science—the misorganization of the science programme and NASA's insistence that astronauts undertake a year's training to become high performance jet pilots finally drove O'Leary to resign. This disregard of science and the astronaut scientists is baffling. The first lunar landing may be justified on

purely exploratory grounds, but "how long will the public buy operational lunar landings performed solely by test pilots at a billion dollars a shot?"

O'Leary cites examples of "a test pilot's shortcomings as a scientific observer on Apollo", and comes to the conclusion that "Now is the time to start including a scientist on an Apollo crew". But scientist astronauts with excellent qualifications are grounded "while rookie pilot-astronauts plan to explore the lunar surface".

Science could help rescue the Apollo programme from its lack of direction. Without some sort of rethink the resignations—O'Leary was the first of several scientist astronauts and scientists—will continue. "The scientific reasons for space exploration are to me the most compelling. To answer such questions as, what are the Moon and planets like? Where did we come from and how did we evolve? How does man react to prolonged weightlessness? What is the universe like, now that we can see it through space rather than through our murky atmosphere?"

Despite NASA's foolish disregard of science, O'Leary manages to throw aside his pessimism and turn his starry eye to the possibilities of the space effort. O'Leary is not a brilliant writer, but he is amusing and his subject is inherently interesting to any scientist.

MICHAEL KENWARD

## Earth in the Open

*Understanding the Earth: A Reader in the Earth Sciences.* Edited by I. G. Gass, Peter J. Smith and R. C. L. Wilson. Pp. 355. (Published for the Open University by Artemis: Horsham, Sussex, 1971.) £3.50 boards; £2.10 paper.

THIS book is a compilation of mostly original articles under the editorship of staff of the Department of Earth Sciences at the Open University. It has been produced in the remarkably short time of nine months in order to provide an up to date and well informed synopsis of particular facets of Earth science at a level suitable for first year university and school courses. There can be no question that the editors have largely when the book is considered in its largely fulfilled their objectives, particularly principal function as a reader within the Science Foundation Course of the Open University, where it forms the link between chemical/biological sciences and studies of the atomic basis of matter. This assured market has also allowed the book to be published at a remarkably low price.

It opens with chapters on mineralogy-petrology and radioactive isotope dating methods, and then turns to consideration of the Earth as a planet; its magnetic field, internal temperatures, the Chandler wobble and comparisons with the Moon. A chapter on meteorites precedes three chapters devoted to the origin of life and the Earth's atmosphere, and a further three on the evolution of life and geomorphological surface features of the Earth. Seven chapters are then devoted to the chief concepts of continental drift and plate tectonics and their relationship to mountain building and volcanism, with asides on possible significances of reversals of the Earth's magnetic field. The relevance of these geotectonic studies to Man is considered in the final four chapters dealing with the location of African ore deposits, the detection, prediction and control of earthquakes and nuclear explosions, and finally the political background of the ill-fated Mohole project.

The content is deliberately unbalanced, giving weight to those areas which the editors consider to be growth points. This results in the excessive compression of mineralogy and petrology into one chapter, and palaeogeography, geomorphology and stratigraphy into another. These are done remarkably well in the space available, although a fuller treatment would have been preferable and space made available by reducing the three chapters on the origin of life, atmosphere and the primitive Earth to a single chapter, particularly as all three are in fact largely concerned with the origin of oxygen in the Earth's atmosphere. Furthermore, whole chapters on the Chandler wobble and the oxidation: polarity paradox could well have been relegated to sections of existing chapters, thus providing space for either the expansion of more basic geological concepts, such as geosynclines, or at least one or two other growth points—the evolution of the Earth's crust, the time of separation of the core, the origin of greenstones, the significance of gravity anomalies, the thermal history of a convecting Earth, and so on—which are almost entirely ignored. It might, however, be even more fitting for the reader to include further items of direct human interest such as the problems of the origin and distribution of oil and natural gas or other biological/climatic deposits. My chief criticism of the choice of topics, however, is the example of geopolitics, the Mohole project, which, although having the elements of farce, was not a fiasco as it gave rise to the JOIDES deep-sea