

**Active crust**

admitted, however, that even before the collapse melting may have occurred in a layer within a few hundred kilometres of the Earth's surface. To what extent the Earth had mountains before the phase-change event is not indicated. It is the phase-change event, a cataclysmic collapse of the Earth's interior, leading to a reduction of the planet's radius by an average of 70 km which is proposed as the primary driving mechanism of mountain building. This collapse is envisaged as occurring over a period of perhaps a few minutes, at most a few hours. Not surprisingly the author suggests that: 'the most violent epoch of mountain-building would of course have been the few minutes of the initial collapse itself'. Thereafter, although the planet is 'thoroughly stable', it evolves with rising internal temperature, yet at the same time contracting steadily, with pressure in the deep interior far exceeding the strength of the material involved. This post-cataclysm contraction amounts to a further decrease of radius of about 300 km, so far. Mountain building subsequent to the cataclysmic collapse is thus a consequence of contraction and the theory quite elegantly explains why periods of orogeny should be separated by periods of relative quiescence lasting of the order  $1.5 \times 10^8$  years.

The book is clearly and concisely written. It opens with a set of summaries which describe, without recourse to mathematical proofs, which feature in later chapters, the principal elements and consequences of the theory. Nine chapters cover the origin of the Earth, its interior, the nature and theory of tidal friction, the phase-change hypothesis, Earth models based on seismic data, the origin of mountains, applications to other planets, and finally a chapter which poses the question: 'Is the Constant of Gravitation Constant?' Illustrations are minimal, 13 figures and one photograph.

What makes this book so difficult to assess is that no attempt is made to discuss the author's model of the mechanism of mountain building in relation to any other view or theory of global tectonics, not even plate tectonic theory. For this reason, I suspect that the author's theoretical arguments, no matter how well formed they may be, will not convince the majority of earth scientists until such time as they are more thoroughly evaluated against the well established body of knowledge of geological processes and Earth history to which little credence is given in this book.

R. McQuillan

Vyskocil, P., Wassef, A. M. & Green, R. (editors) 1983. *Recent Crustal Movements*, 1982. Elsevier, Amsterdam, 351 pp. Price: hardcover US \$89.25 (in U.S.A and Canada), Dfl. 210.00 (rest of the world). In the USA and Canada the book is available from Elsevier Publishing Co. Inc., P.O. Box 1663, Grand Central Station, New York, NY 10163, U.S.A.

The papers in this volume were presented at the 3rd Symposium on "Recent Crustal Movements and Phenomena Associated with Earthquakes and Volcanism" in May 1982 in Tokyo at the General Meeting of the International Association of Geodesy. The volume is split into four sections:

- (i) new results in crustal movement studies at local or regional scale;
- (ii) crustal deformations associated with volcanism;
- (iii) crustal deformations associated with seismic activity;
- (iv) error analysis; computations, methods of measurements.

There are 25 papers and 20 abstracts. The abstracts are, for the most part, useful only because they contain the mailing addresses of the authors concerned who might, through correspondence, reveal the data on which their conclusions are based. The meat of this book is in the papers: of the 19 in the first three sections 9 are on Japan, 6 on the U.S.A. and one on each of Venezuela, Australia, Fennoscandia and the U.S.S.R. There is, thus, a strong bias towards the U.S.A. and Japan.

As in any collection of such papers, some are good and present new data in sufficient detail to be useful, while others are not. The main criticism of this book is its price: \$85 for 25 papers is not good value. Moreover, the entire collection of papers and abstracts had already been published as a single issue of *Tectonophysics* (volume 97, pp. 1-351). This book simply adds hard covers. Its price is prohibitive for any student or private library. Institutional libraries who do not already subscribe to *Tectonophysics* should consider whether to do so rather than pay so much for a single issue.

J. A. Jackson