BOOK REVIEWS

WYLLIE (P. J.). *The dynamic Earth: textbook in geosciences.* New York and London (John Wiley & Sons, Ltd.), 1971. xvi + 416 pp., 200 figs. Price £8·90.

This text is offered as part of a design for geology courses that emphasizes major units of the Earth, and major geological processes, without regard for the conventional subject boundaries of many curricula. It is aimed at graduate students and teachers, and for each major topic the author has endeavoured to show how the associated ideas developed, and to present both sides of any controversies.

After chapters on the surface features and physical properties of the Earth and its interior and on geological processes and the geological time scale, there is a chapter on the nature of the crust–mantle boundary and the gabbro–eclogite phase transition, which, in thirty pages, succinctly summarizes the models based on a chemical transition versus the phase-transition hypothesis. The peridotite–serpentinite model of Hess and the gabbro–eclogite transition as proposed by Lovering and Kennedy are discussed, together with the relevant experimental studies, then under the phase-transition hypothesis the sub-headings concern its revival by Lovering and Kennedy, modifications based on the results of Yoder and Tilley, rejection by Ringwood and Green, revitalization by Press, Ito, and Kennedy, and rejoinder by Green and Ringwood—which will serve to give some flavour of the approach used in this book. Following chapters deal with the composition and mineralogy of the mantle, the structure, petrology, and composition of the crust, and magma generation. Then, after chapters on the classical view of geosynclines and the orogenic cycle, and on the tectonic significance of phase transitions, there is a logical sequence through continental drift and the modern evidence including palaeomagnetism, polar wandering, and ocean-basin magnetic anomalies, leading to the concept of sea-floor spreading and to the penultimate chapter dealing with plate tectonics. This is very properly followed by a final all-too-brief chapter mentioning the contrary views of Beloussov and the distribution of palaeoclimate indicators considered by Meyerhoff to reduce the plate tectonic theory to the status of speculations supported by only a fraction of the known geological, palaeontological, and palaeoclimatological data. The references are all collected together at the end of the text and there are author and subject indexes.

The volume contains a record of the revolution in the Earth sciences during the last decade. Some professional scientists busily engaged in their own work during the 1960s may no doubt find this volume, as the author hopes, a useful substitute for hours of library research. But on this level it sometimes leaves one unsatisfied; there is frequent reference to the chapter on plate tectonics to provide the answers, but often this chapter hardly even mentions the problems. Certainly one is aware of the changing fashions in petrology: gone is the compulsive preoccupation with granites of ten or twenty years ago. This book fills a need in providing a more unified overall view of the Earth's crust and mantle and will be a useful addition to the texts available to advanced students outside their specialized field of study or research.

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