

New frontier for stratigraphy

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The Geology of China. By Yang Zunyi, Cheng Yuqi and Wang Hongzhen. *Oxford University Press*: 1986. Pp.303. £55, \$79.

WITH 9.6 million km² China covers nearly one-fifteenth of the world's land area and is the third largest country in the world. The geology of this vast portion of our planet is now being studied by some 70,000 geological personnel in China. Their results are reported regularly in some 50 Chinese periodicals and monograph series, only a few of which contain English abstracts. *The Geology of China*, the second book of its kind since Li Siguang's (J.S. Lee's) 1939 classic bearing the same title, has been written by two stratigraphers and a metamorphic geologist to provide an up-to-date survey of the subject. It is based mainly on the immense amounts of both published and unpublished work done since the foundation of the People's Republic.

The book contains a total of 20 chapters, divided into four main parts. Part I ("Background") briefly reviews the development of geology in China and the physical features of the country. Part II ("Stratigraphy") is the backbone of the book, consistent with the dominant interest of the authors. Here, in the first chapter the stratigraphic terminology employed in the book is reviewed and a synopsis of the stratigraphic evolution of China is presented. The next three chapters deal with the Archaean and the Proterozoic eons and the Sinian system. Nine of the remaining ten chapters of Part II treat individual systems from the Cambrian to the Cretaceous, while the last describes, too briefly perhaps, the Cenozoic. In each chapter sedimentary rocks are discussed in terms of stable (platform), mobile (geosynclinal) and transitional sedimentation types — this was an unfortunate choice, which makes understanding of former sedimentary environments in terms of present-day settings difficult. Although boundary and correlation problems are considered for each system, palaeobiogeographic provinces are touched upon only in chapters on the Carboniferous and the Permian systems.

Part III ("Magmatic and Metamorphic Rocks of China") contains two chapters, one each for the two major rock groups. Here the treatment is mainly regional and chronological.

In the last part ("Geotectonic Development of China"), two chapters are devoted to the tectonic framework and geotectonic units, and the geotectonic

development of China respectively. Although much lip service is paid to plate tectonics, and the few palaeotectonic cross-sections are drawn in basic plate-tectonic terms, the underlying framework in both of these chapters is based on an unhappy marriage between a Soviet-style fixist philosophy and plate tectonic mobilism. The descriptions and arguments are made even more difficult for the reader to follow because of the authors' peculiar employment of familiar terminology such as aulacogen and continental margin.

A serious limitation of the book is the almost complete lack of reference to foreign or cooperative research on Chinese geology. For example, Molnar and Taponnier's epoch-making studies on the neotectonics of China are not even mentioned. Further, there is no reference to the Franco-Chinese work on Tibet (absence of mention of the geophysical results is especially glaring), nor to the important magnetostratigraphic work by Liu Dongsheng and his co-workers on the loess deposits. Such omissions have in places led to some rather odd conclusions, such as the supposed late Mesozoic origin

and Cenozoic inactivity of the Altyn–Tagh fault.

The paucity of sketch-maps showing particular geological relationships and outcrops adds to the problem of comprehending both local and regional details, so the book is difficult to use to reinterpret the data in terms of models other than the authors'. Despite its deficiencies, however, *The Geology of China* is a must for those interested in the regional stratigraphy of this country. A subject and a stratigraphic index (both in Pinyin transliteration and in the original Chinese characters) increase the value of the book, as do the 19 black-and-white plates of fossils and photomicrographs of representative lithologies. However, readers would be well-advised to keep at hand either one of the post-1980 comprehensive editions of the *Times Atlas* or the *Zhonghua Renmin Gongheguo Fen Sheng Dituji*, for many of the places mentioned in the text are not on any of the maps in the book. □

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A diverse life

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Community Ecology. Edited by Jared Diamond and Ted J. Case. *Harper & Row*: 1986. Pp.665. \$37.50, £16.95.

SUPPOSE, for the sake of argument, that the genetic code, instead of being determined solely by DNA, was co-determined by seven classes of macromolecule. Suppose, too, that in a given species the relative role of the macromolecules varied with age, season, weather conditions and time since the last glaciation, and also tended to differ between large and small species, ectotherms and endotherms, and herbivores and carnivores. If this were true, we would surely not have our present complete understanding of the code. And yet, as the editors of this volume point out, this is exactly the problem that ecologists face in trying to explain how the abundances of interacting species in a community are co-determined by competition, predation, herbivory, disease, parasitism, mutualism and disturbance. Later in the book we are told that studying ecology resembles what it would be like to conduct a chemistry experiment if the chemist were only a few angstroms long and lived for only a few microseconds!

Attempts to solve the daunting problems of variability and scale in community ecology demand a diversity of methodologies to obtain the data and a diversity of models to interpret them. The methods

include laboratory experiments, field observations, experiments in the field, "natural" experiments involving comparative observations at several contrasting outdoor sites, and reconstructions based on historical records in library and museum archives and in fossil assemblages. All figure prominently in this stimulating collection of 33 essays by 35 authors (34 from North America and one from England). The book is written with the professional researcher in mind, but undergraduates will find much of the material accessible.

Each of the five sections of the book opens with a scene-setting chapter. The first, by Jared Diamond, compares the merits of the different experimental approaches and is followed by an account of probably the most ambitious laboratory experiment on community assembly yet attempted — Michael Gilpin and his co-workers describe how the results from 28 species of fruit fly studied singly can be used to predict, with surprising accuracy, the outcome of pair-wise interactions or ten species combinations.

Section 2 is concerned with species introductions and extinctions. Competition between species for food or space is potentially a potent force in the structuring of communities, with species co-existing only if they exhibit some minimal differences in their resource requirements. If this potential is realized (and there is much debate about the point), competition must operate through a process of selective extinction. Michael Moulton and Stuart Pimm have come up with a novel