GEOLOGICAL JOURNAL, VOL. 30, 79-87 (1995)

BOOK REVIEWS

PALAEOZOIC VERTEBRATE BIOSTRATIGRAPHY AND BIOGEOGRAPHY edited by John A. Long. Belhaven Press, London, 1993. No. of pages: 369. Price: £65.00 (hardback). ISBN 1 85293 154 X.

As a worker on fossil arthropods being asked to review a book on Palaeozoic fish, I was a little taken aback, but it soon became clear that this book is of interest to any palaeontologist working in the Mid- to Late Palaeozoic. Divided into three parts, the first, 'Morphology, tectonic setting and Extinction of Palaeozoic vertebrates', contains three introductory chapters. Chapter 1, by John Long, is an up to date account of the current classification and morphology of agnathans and gnathostomes, with plentiful illustrations of the different types of dermal scales which typify the fish taxa and enable their use in biostratigraphy. Chapter 2, by Li, Powell and Trench on Palaeozoic global reconstructions, is the most generalized in the book. It reviews the problems of using palaeomagnetism in palaeogeographic reconstruction, summarizes the palaeomagnetic evidence for each Palaeozoic continental block, critically discusses some recent reconstructions and provides useful new ones. Chapter 3 is a short article by John Long which plots the diversity of fish families through the Middle Palaeozoic. The data clearly reveal the end Frasnian extinction, particularly of agnathans, possibly brought about through a global sea-level rise following increased biotic interchange and competition, and an end-Devonian extinction event at the time that more advanced gnathostomes were diversifying.

Part 2, 'Palaeozoic vertebrate biostratigraphy', forms the core of the book. There are reviews of Mid-Palaeozoic agnathan biostratigraphy of the Old Red Sandstone continent (Janvier and Blieck) and of Siberia and neighbouring regions (Blieck and Janvier), the gnathostome biostratigraphy of the Euramerica province (Dineley and Loeffler), of western Gondwana and related terranes (Lelièvre, Janvier and Blieck), microvertebrate (Turner) and macrovertebrate (Young) biostratigraphy of eastern Gondwana and vertebrate biostratigraphy of China (Wang) and south-east Asia and Japan (Long). All of these chapters provide detailed descriptions and citations of the Mid-Palaeozoic vertebrate-bearing localities in the areas under study and thus form a valuable reference, as well as narratives on the current state of vertebrate biostratigraphy — an emerging tool particularly in facies devoid of more traditional biostratigraphic markers.

I enjoyed reading the two chapters making up Part 3: 'Palaeozoic vertebrate biogeography'. Young's chapter on vertebrate faunal provinces in the Mid-Palaeozoic discusses his previously published five faunal provinces and then discusses current debates concerning Devonian palaeogeographic reconstructions. There is a discrepancy between reconstructions for the Devonian based on palaeomagnetism and the fossil evidence. Pole positions tell us that Euramerica was close to Gondwana in the Early Devonian, but that these continents were separated by a wide ocean in the Late Devonian; this is exactly the opposite of the pattern suggested by palaeontology. Young prefers palaeomagnetic interpretations which place the two continents in connection and with fish faunas at reasonably low latitudes. Referring back to Chapter 2, Li *et al.* consider the palaeomagnetic evidence for the wide ocean between Euramerica and Gondwana to be more dependable than Young admits, and these authors prefer a northerly, microcontinent-hopping route to explain the dispersal of continental vertebrates in the Late Devonian. Finally, Milner discusses the biogeography of Palaeozoic tetrapods in Chapter 13. Evidence for Palaeozoic tetrapods is sparse so biogeographic hypotheses can be overturned with a single new record. The earliest evidence for tetrapods is a middle Devonian trackway from Victoria, Australia, and it is discoveries of Devonian tetrapods in eastern Gondwana that have prompted re-evaluation of older ideas on tetrapod origins and dispersal.

The book will provide information not only to vertebrate palaeontologists but also to stratigraphers and palaeogeographers working on the Middle Palaeozoic. The text is almost error-free (but I enjoyed 'Honk Kong' on p. 299) and the illustrations helpful. The main drawback is the high price. Though a robust hardback, the printing does not merit it; obviously set to reflect the presumed low number of sales, that is precisely what it will achieve.

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