

BOOK REVIEWS

JOHNSON, D. 2009. *The Geology of Australia*, 2nd ed. Cambridge University Press. 348pp. Price £40.00, US \$70 (paperback). ISBN 978 0 521 76741 5. doi:10.1017/S0016756810000439

Fortunately, demand for David Johnson's *Geology of Australia* must have been sufficient for Cambridge University Press to publish this second edition just five years after the first edition appeared. This well illustrated introduction to the geology of one of the great Gondwanan continents is particularly useful for students in that it not only deals with the geological development of the continent but also discusses the basic principles and processes of geology from a southern hemisphere perspective.

Following that 'geology primer', Johnson follows a chronological account from the Precambrian through to Cenozoic and modern times. Then there are substantial chapters on specific topics from an Australasian perspective, such as the evolution of life, building the continental shelf and Great Barrier Reef to climate change. Each chapter ends with a short list of appropriate websites, as is expected these days.

For a single author to cover such a huge range of information is a considerable undertaking. Johnson has taken the opportunity of this new edition to update information and improve the balance of topics by upgrading the sections on palaeontology and climate change.

The abundant illustrations are invariably of high quality and range from colour photos of sites, rocks and fossils to maps, cross-sections and diagrams plus plenty of other black and white illustrations from numerous sources, all carefully listed at the back, along with a very full and useful bibliography and index. The production quality is high and although already 348 pages long, the book is not unwieldy and could reasonably be expanded somewhat in future editions. For students and other geologists who are not familiar with the geology of Australia this is an ideal starting place.

Douglas Palmer

AMBRASEYS, N. 2009. *Earthquakes in the Mediterranean and Middle East: a multidisciplinary study of seismicity up to 1900*. Cambridge University Press. xx + 947pp. Price £120.00, US \$210.00 (hard covers). ISBN 978 0 521 87292 8. doi:10.1017/S0016756810000452

It is a great relief to see this monumental work finally printed. Professor Ambraseys has towered over research into historical earthquakes for 50 years. He didn't invent the subject, but he certainly demonstrated how it should be done to standards that make it effective, with a level of scholarship that very few people can match. That it is important is beyond doubt: earthquakes repeat on particular faults only every few hundred or thousand years, even in places that are moving quickly, like California. The modern, high-quality, instrumental record of earthquakes provided by seismology is only about one hundred years long, and is clearly inadequate to see longer-term patterns.

Ambraseys has been pointing this out for years: thus, for instance, the Dead Sea fault system, from Aqaba to

Antioch, has been very quiet in the 20th century, but was the site of several enormous earthquakes over the previous thousand years, some of which are well-documented by historical sources in crusader times. The last 100 years are simply not representative of the longer period, and give a completely misleading and unrealistic view of the true earthquake hazard.

In 1982 Cambridge University Press published Ambraseys & Melville's book *A History of Persian Earthquakes* (re-published 2005), which was widely admired and used by seismologists, engineers and tectonic geologists. It is an extraordinary work of scholarship and absolutely iconic, setting a standard in this area of research that has not, in my opinion, been equaled since. It is so good because they returned to original literary sources and assessed them with a modern, well-informed eye. This requires a prodigious range of skills: an exceptional linguistic ability, able to take on ancient Aramaic as well as mediaeval Persian and Arabic; a profound historical knowledge of the region, able to tell whether documentary silence from a place was really because there were no earthquakes, or because trade-routes had switched, places had declined in importance through disease, invasion etc.; the knowledge of a well-informed modern seismologist, able to interpret the historical accounts in a realistic way, allowing for the inevitable hyperbole in a way that is physically realistic and possible; and finally the eye of an engineer who is familiar with indigenous building styles and building performance in earthquakes, and can interpret the historical accounts accordingly. To cap it all, Ambraseys has spent a huge amount of time in the field, visiting and assessing the sites of these earthquakes, and in many cases identifying the faults responsible for the earthquakes themselves. Ambraseys has all these skills, and no-one else does.

This new book is a distillation of Ambraseys's research in the area 28–44°N, 18–44°E, roughly from Romania to Egypt and from Albania to Iraq, drawing on and acknowledging his collaborations with others, especially with Charles Melville, Caroline Finkel and Dominic White, who supplied specialist knowledge in arcane languages. The bulk of the work is 750 pages containing evaluations of earthquakes prior to 1900, most of them over the last 2000 years. The accounts summarize key primary documentary sources (in English), correcting errors in previous compilations and discussing different modern interpretations of some of the more important large events. This is an invaluable core of knowledge and scholarship, and it is a great achievement to render it accessible in a single volume.

Shorter chapters discuss the nature and evaluation of the historical and macroseismic data sources, the evaluation of 20th century instrumental seismic data (important in providing the calibration between instrumental and macroseismic measurements necessary for a realistic estimation of pre-instrumental magnitudes), patterns of long-term seismicity, and the tectonic setting. All of these are balanced, sensible and useful in the high-quality and reliable tradition of all Ambraseys's immense published output. The preface of the book is particularly interesting, containing the author's quite freely-expressed, almost philosophical conclusions and perspectives on seismic hazard in developing countries, after a long, distinguished and widely admired career. They are also rather gloomy