variability are covered in some detail, as are facies relations. The lithology of every unit is discussed in some detail. Complete references are provided for each stratigraphic unit. The fossils known from each unit are listed and critically evaluated for their age significance. The English is very readable. The alphabetical list of references is the most complete available for Vietnam, including both Vietnamese and foreign publications. An index of the stratigraphic units is provided. An index of geographic and geologist's names is also provided, as well as a detailed table of contents.

Both Editors are experienced, senior geologist-biostratigraphers, with wide experience in both field and laboratory dealing with the stratigraphic geology of Vietnam. The book covers the varied structural relations of the stratigraphic units, as well as their relations to overlying and underlying units. The material is organized into seven chapters: Sedimentary Basins of Viet Nam; Precambrian; Lower Paleozoic (Cambrian through Silurian); Middle Paleozoic (Devonian); Upper Paleozoic (Carboniferous and Permian); Mesozoic; and Cenozoic; within each of these chapters the material is arranged stratigraphically for each region into which the nation is divided. Useful, coloured index maps covering the Precambrian through Tertiary, eight in number, are provided. For anyone unfamiliar with the geology of Vietnam these various aids provide easy entry to the stratigraphic geology of the country. The printing is clear and well organized.

Arthur J. Boucot

BOWDEN, A. J., BUREK, C. V. & WILDING, R. 2005. *History of Palaeobotany. Selected Essays*. Geological Society Special Publication no. 241. v + 304 pp. London, Bath: Geological Society of London. Price £80.00, US $144.00; GSL members' price £40.00, US $72.00; AAPG/SEPM/GSA/RAS/EFG/PESGB members' price £48.00, US $87.00 (hard covers). ISBN 1 86239 174 2. doi:10.1017/S0016756807003214

There are few volumes on the history of palaeobotany. The most important in recent years was Henry Andrews' *The Fossil Hunters*. This was far from a complete history and is in need of revision. There is still considerable interest in the topic as can be evidenced by this Geological Society Special Publication. The mix of papers within this volume reflects the diversity of authors and the quality varies; some of the papers are scholarly analyses whilst others consist mainly of historical documents.

There are 18 papers in this volume which includes an interesting paper by Torrens, himself not a palaeobotanist, on Henry Steinhauer, showing that he was a much neglected figure and that he was the first to use Linnean nomenclature for fossil plants. Torrens has done a great service in highlighting Steinhauer's work. Cleal and others take a different approach from normal considering the illustrations and illustrators of fossil plants. This is a useful addition to the literature.

Other papers consider individuals from Hugh Miller to Marie Stopes and others, or 'schools' such as at Glasgow, Manchester and Sheffield. Many others might have been included but this needs people and time to write the articles and in the days of the RAE this is not always possible. Whilst most of the articles concern European palaeobotanists there are two articles on the history of palaeobotany in Argentina and China.

This is an unusual book, being selected essays, and I am not sure many individuals will buy it but I hope it is taken by libraries to be a future valuable resource for those interested in the history of science.

Andrew C. Scott

Reference

ANDREWS, H. N. 1980. *The Fossil Hunters*. Ithaca: Cornell University Press.

SELINUS, O., ALLOWAY, B., CENTENO, J. A., FINKELMAN, R. B., FUGE, R., LINDH, U. & SMEDLEY, P. (eds) 2005. *Essentials of Medical Geology. Impacts of the Natural Environment on Public Health*. xiv + 812 pp. Amsterdam: Elsevier. Price £59.99 (hard covers). ISBN 0 12 636341 2. doi:10.1017/S0016756806002305

With fears of pandemic diseases at a time when general public health is at an all-time high in the developed world, it is easy to overlook the influence of the surrounding, inorganic environment on peoples' health. Were you to live on the lower floodplains of the Ganges or Brahmaputra rivers, in West Bengal or Bangladesh, that influence would be all too apparent. In the interest of reducing endemic poor heath resulting from waterborne pathogens, there has been a huge programme of well-sinking to tap abundant, biologically clean groundwater since the 1970s. By the mid-1980s it had become clear that a completely unexpected case of 'out of the frying pan into the fire' had emerged. Villagers began to present the classic symptoms of chronic arsenic poisoning: horny lesions on hands and feet (keratoses) and dark spots on the rest of the body (now termed 'the Devil's rain' by many Bangladeshis). A combination of the geological evolution of the river sediments and simple geochemical reactions had led to what the World Health Organization claimed to be the greatest case of mass poisoning in human history.

The arsenic tragedy in the northeast of Peninsular India re-emphasized that where we live bears on our health. Arsenic poisoning has been a risk in areas of metal mining, particularly for sulphide ores and gold, known for centuries. Equally, deficiencies in essential trace elements were long recognized as causes of several physical ailments, such as goitre from too little iodine in the diet, generally in areas distant from the sea that do not receive wind-blown sea salt dissolved in rainwater. In fact there is a host of geochemically induced ailments, and others that stem from the mineralogy of local rocks, such as cancers associated with inhalation of asbestiform minerals. Although clinicians have been increasingly concerned with environmental health threats, only recently have their ranks been joined by geoscientists, in an internationally organized way. In 2000 UNESCO set up IGCP 454 Medical Geology, to be followed by the International Medical Geology Association, one of the driving forces for these initiatives being Olle Selinus of the Swedish Geological Survey, Editor-in-Chief of *Medical Geology.*

At £60 in hardback, the book runs to more than 800 pages, printed in full colour and is good value on that score. It opens with a full treatment of the biological role of the elements – chemical aspects of uptake and response – and their natural and anthropogenic sources in eight chapters. That is essential reading for environmental geochemists, to supplement empirical relationships between exposure and symptoms gathered from field studies.

Section II examines the various pathways through geological and geochemical systems, *en route* to ingestion

and organic uptake. Twelve chapters examine environmental deficiency and toxicity, and cover: volcanic emissions; radon; arsenic; fluoride; water hardness; selenium; iodine, aerosols and soil-borne pathogens, with more general reviews. The chapter on arsenic, though fairly comprehensive, fails to acknowledge or reference the outstanding contributions by John McArthur of UCL, London and Peter Ravenscroft to understanding the science behind the plight of Bengali and Bangladeshi villagers.

Section III includes five chapters on environmental toxicology, pathology and medical geology. One explains the role of epidemiology – statistics of disease occurrences – in assessing the outcomes of exposure to environmental hazards, an essential yet quite difficult part of medical geology. The chapter on environmental medicine overlaps to some extent with others, but includes material on risk assessment, such as establishing safe levels for ingestion of elements. Pathology and toxicology (Chapters 23 and 24) play important roles by establishing causes of ill-health and death, when causes have to be linked to effects – many geochemically induced ailments present symptoms that can be mistaken for those with other causes. This is of particular importance in recognizing respiratory cancers linked to inhaled dusts. Potentially toxic elements often occur in several ionic forms or species (Chapter 25), so that elemental arsenic, for example, although widely feared is a great deal less toxic than arsenite ions (AsO_3^{3-}) or the gas arsine (AsH_3). So the form in which an element enters and resides in an environment is crucial to its effects: often that is determined by the oxidation potential.

The final section covers investigative methods that are appropriate to discovering and assessing the risk from environmental hazards, both on the lab bench and using information and communications technology. The latter is now a powerful tool for analysing spatial information, whether it is the relationship of environmental chemistry to rock types, or modelling how hazardous materials move through environmental systems.

Though a monumental tome, *Medical Geology* is not a reference book, but one from which final-year geoscience undergraduates can learn a great deal, in the manner of equally huge first-year textbooks on physical geology. Traditional geology is rapidly being supplanted by that with a more applied emphasis, so-called 'environmental geology'. That is so for two reasons: traditional skills are becoming less valued in the market place than those demanded by legislation for protection of and from human environments; and increasingly it becomes clear that quality of life, and its length, are conditioned by a great many more factors than were once recognized. The clarity and high quality of the book, despite quite a lot of overlap between the chapters, is witness to the serious concern of all of its authors.

S. A. Drury

CHADWICK, R. A. & EVANS, D. J. 2005. *A Seismic Atlas of Southern Britain – Images of Subsurface Structure*. viii + 196 pp. + CD. Keyworth: British Geological Survey. Price £30.00 (paperback). ISBN 0 85272 512 4. doi:10.1017/S0016756806002871

Our detailed knowledge of the surface geology of Britain is perhaps unique as a result of centuries of study but the subsurface geology and structure are less well known. In contrast, since the late 1960s the subsurface geology of the offshore areas of the UK has been extensively surveyed using seismic techniques to the point at which detailed 3D images of large areas are available. The amount of seismic data acquired onshore is very small. Most of it is 2D and covers the Permian and Carboniferous basins either side of the Pennines and the Weald and Portland areas of southern England. Principally these data were acquired for hydrocarbon and coal exploration and much of it is publicly available as part of the UK Onshore Geophysical Library. While some of the data in the library are only a few years old, some date back to the 1960s and consequently the quality varies considerably.

The British Geological Survey has recently undertaken a review of these data and this book is the result. It is not really an atlas in the true sense of the word, more a gazetteer of images of some of the more important fault structures of England and Wales which are well imaged in seismic data. These structures are also used to illustrate patterns of faulting or specific events in the development of the basement rocks of southern Britain. There are no stratigraphic horizon maps or isopach diagrams, which perhaps reflects the predominance of 2D data available. The maps included show the surface and subsurface traces of the faults and the locations of the seismic lines illustrating them. In some cases these are supported by additional maps of geological and potential field data.

There is a short introduction describing the evolution in quality of the seismic data and the structure of the *Atlas*. I felt that an opportunity to review how that evolution was linked with developments in our understanding of the geology was missed at this point. Our knowledge of many of the structures of southern Britain is still relatively poor despite the availability of the data and it would have been useful to provide some examples of how our knowledge has been gained, if only to illustrate the limitations of the interpretations shown later. Chapter 2 provides a concise description of the major tectonic cycles that formed the present bedrock geology. This will be familiar to most readers of this book. What is more useful is that the structures illustrated by seismic data in the remainder of the book are indicated in bold text and heavy lines on maps. This is an invaluable quick reference for finding whether the features you may be interested in are included in the volume; most of the major features are, but this *Atlas* is by no means comprehensive.

The main part of the book is divided into three sections: basement and igneous features, sedimentary cover affected by the Variscan and sedimentary cover affected by the Cimmerian tectonic events. This is a logical structure since it automatically places most of the fault zones in their correct tectono-stratigraphic context. Each structure is very well illustrated, usually with more than one seismic profile as well as a map and occasionally potential field data. The profiles themselves are well chosen to illustrate a particular aspect of the structure or alternatively a particular faulting process, e.g. development of relay ramps or inversion, that the fault displays and that is relevant to the larger tectonic setting. Key stratigraphic horizons are picked on the seismic data, usually to display directions and amounts of throw or the positions of null points on inverted structures. While these are useful, they are keyed to a table at the end of Chapter 2 and not the figure captions, requiring frequent back referencing. Although many readers may be content with the illustrations presented here anyone using this book as a potential starting point for researching a particular structure and obtaining the relevant seismic data may be disappointed to note that the individual seismic lines shown are not referenced nor listed by their survey designations. I do not know if this was deliberate or an omission but it would have been useful to have them listed. In contrast, all the relevant BGS maps are included in the short reference list.