the unity and clarity of presentation achieved by Bowen and the original will still be a classic when this is outdated.

P. E. BROWN

Reading (H. G.), Editor. *Sedimentary environments and facies.* Oxford (Blackwell Sci. Publications), 1978. xii + 557 pp., 495 figs. Price (paper) £13·00.

This excellent textbook includes chapters by ten prominent sedimentologists: John D. Collinson, Marc B. Edwards, Trevor Elliott, Hugh C. Jenkyns, Howard D. Johnson, Andrew H. G. Mitchell, Nicholas A. Rupke, Bruce W. Sellwood, Roger Till, and Harold G. Reading (M.A. 80-1208). Each chapter, excluding introduction and final analysis, is written to a common formula. Present day environments and processes are described together with the sediments that characterize them. Examples of ancient sedimentary rocks of the same association are then considered in considerable detail. Literature references are collected together in a single, comprehensive list at the end of the text with only a few suggestions for further reading included with each chapter.

The second chapter (Reading) is devoted to a discussion of the facies concept: construction, interpretation, and environmental controls. The succeeding chapters describe specific environmental situations: alluvial sediments in Chapter 3, lakes in Chapter 4, and deserts in Chapter 5; all three being contributed by Collinson. Chapter 6 deals with deltas and deltaic sediments (Elliott), Chapter 7 with clastic shorelines (Elliott), and Chapter 8 with arid shorelines and evaporites (Till). Shallow marine environments are considered in Chapters 9 and 10, the former (Johnson) devoted to siliciclastic seas, the latter (Sellwood) to carbonate environments. Deep clastic seas (I am not quite sure about some of the terminology here) are described in Chapter 12 by Rupke and glacial environments by Edwards in Chapter 13. Reading then combines with Mitchell in a useful discussion of sedimentation and tectonics before a finel summary titled 'Problems and Perspectives'.

The authors are quite clear about their objectives: 'The purpose of this book is to show how ancient environments may be reconstructed by interpreting first the process or processes which gave rise to facies and then the environment in which the process operated'—p. 2. I am sure these have been admirably achieved. I should have liked, however, to see more references to compaction (especially differential compaction) which seems to me to be one very important aspect of environmental reconstruction.

The great strength of this textbook lies in the fact that it is a text and not just a collection of papers contributed by experts on their specialities. The editor must be congratulated on achieving such homogeneity of approach. The book is profusely and excellently illustrated and produced to the high standards we have come to expect from Blackwell. It covers a smaller part of the total field of sedimentology than competitor texts, but I would (and do) recommend it wholeheartedly not only to sedimentologists but to any geologist who wishes to catch up with the tremendous advances that have been made in the last 15 years.

C. D. CURTIS

Bischoff (J. L.) and Piper (D. Z.), Editors. *Marine Geology and Oceanography of the Pacific Manganese Nodule Province* (Marine Science, vol. 9). New York and London (Plenum Press), 1979. xii + 842 pp., 297 figs., 6 microfiche cards (in pocket on inside back cover). Price $49.50.

This book provides a welcome addition to the literature on marine geology and oceanography in that it provides an up to date detailed analysis of geological and oceanographic factors pertinent to the exploitation of manganese nodules in the northeastern equatorial Pacific, the area from which they will first be mined. No previous publication has dealt in such detail with the environment of ore grade nodule formation, and editors Bischoff and Piper are to be congratulated on drawing together the diverse information important in this regard.

Somewhat over half of the book [M.A. 80-1201] is devoted to studies in the DOMES (Deep Ocean Mining Environmental Study) area in the northeastern equatorial Pacific, where integrated studies on the water column, the biomass, sediments, and nodules, have been carried out under the auspices of the US National Oceanic and Atmospheric Administration. This study points the way to how non-engineering problems related to nodule mining should be approached, and will serve as a model for future investigations. The latter part of the book deals with a more diverse collection of topics, some, but not all, of which are also specific to the northeastern equatorial Pacific. These include sections on sea-floor geology, nodule chemistry, and nodule growth rates. Most of these describe studies carried out in the northeastern equatorial Pacific other than the DOMES investigations, and include important chapters on sediment redistribution and manganese nodule resources in the region. The northeastern equatorial Pacific papers are balanced by a selection on nodules and sediments from other regions, including aspects of the French, German, Russian, New Zealand, and Japanese nodule programmes

in the Pacific. Some of these papers provide information of general importance in understanding manganese nodule genesis, such as Pautot and Melguen's illuminating discussion on the influence of bottom currents on nodule development, the results of which could probably be successfully applied elsewhere. The final four chapters address themselves to the problem of nodule growth rates, but do not solve it.

Overall, the papers in this book are of a reasonable to high quality, and there are a few gems. Its high price would probably put it outside the student or individual researcher market, but any Institution or Company dealing with marine affairs should have a copy in its library.

D. S. CRONAN

Sorem (R. K.) and Fewkes (R. H.). *Manganese Nodules: Research data and methods of investigation.* New York and London (Plenum Press), 1979. x+724 pp., 375 figs. Price $95.00.

Unlike the other manganese nodule book reviewed here, this one deals with a specific study by a group of individuals at one institution, the Washington State University. Sorem and his colleagues have built up a reputation over the past 15 years for careful detailed microscopic, micromineralogical, and microchemical studies on manganese nodules, which have provided a data base for much of the discussion on their origin. This book places in the public domain many of the raw data collected by Sorem and colleagues during these years, which has hitherto been unavailable to the scientific community at large.

The first fifth of the book deals with the techniques of preparation of nodules for the studies described, and a discussion of their internal structures and micromineralogical and chemical variations. This is a useful summary of the subject, and serves well to introduce the main body of the book which is a catalogue of sectioned manganese nodules in the Washington State University Collection. Sorem has long been renowned for producing the best photographs of polished sections of nodules, and here are enough of them to satisfy even the most ardent collector. All the specimens have been carefully prepared and beautifully photographed, producing a result which is aesthetically pleasing as well as scientifically valuable. Each photograph is accompanied by available basic data on the specimen in question such as mineralogical and chemical composition, nature of the nucleus, etc. which provides some hard facts to accompany the visual impression.

This book could be considered as a monument to the work of Sorem and his co-workers over the past decade and a half, and even to a generation of students of manganese nodules who valued them for their intrinsic scientific worth rather than their potential commercial value. No serious student of the subject can afford to ignore it.

D. S. CRONAN

Spriggs (M. J.) and Castell (K. D.), Editors. *Uranium Supply and Demand. Proceedings of the Third International Symposium held by The Uranium Institute, London, July 12–14, 1978.* London (Mining Journal Books Ltd), 1980. xiv + 370 pp., 59 figs. Price £15·00 ($30.00) surface mail, £18·00 ($36.00) air mail.

The Uranium Institute was established in June 1975 to provide a forum for its membership, drawn mainly from the major uranium producers, processors and consumers, to discuss all aspects of the nuclear fuel industry. Emphasis is placed on co-operation between various sides of the industry and the annual symposium (which is open to non-members) examines world-wide issues such as nuclear power and safety, public acceptability, non-proliferation policies, etc. which affect future development.

In consequence, the proceedings of the Third International Symposium on Uranium Supply and Demand held in London in July, 1978, will be of most relevance to those scientists closely connected with the nuclear fuel cycle and of limited attraction to geoscientists whose interests lie elsewhere.

Furthermore, as the majority of uranium geochemists and mineralogists are involved mainly at the exploration/evaluation stages of the cycle, this volume, comprising as it does the transcripts of speakers' presentations in sessions on the uranium market, technical factors influencing supply, nuclear controversy, and non-proliferation, and fuel assurance, may be of general interest rather than a source for scientific data.

The principal exception among the twenty-nine published contributions is that by H. E. James and H. A. Simonsen entitled 'Ore-processing technology and the uranium supply outlook', which, in sixty-four pages of text and figures, provides an excellent review of the mineralogy and processing characteristics of the major types of uranium ore together with an assessment of the adequacy of existing flow-sheets and the scope for improvement in exploitation technology. Details of the mineralogy and its implication on ore processing are tabulated for each major producing area and should provide a most useful set of reference data for mineralogists and ore-dressers involved in the evaluation of new deposits.

In spite of these comments, it is certain that this