Vibrational properties (P. Gillet, R.J. Hemley, P.F. McMillan), electronic and magnetic properties (R.J. Hemley, H-k. Mao, R.E. Cohen), and theoretical techniques (L. Stixrude, R.E. Cohen, R.J. Hemley). Chapter 12 on high-pressure melting is a particularly good review of a rapidly changing and technically difficult field and Chapter 18 emphasizes the important changes in bonding that can change mineral properties. The final theoretical chapter touches on the increasing contribution of first-principles and *ab initio* methods to our understanding of the deep Earth. Clearly experiment, as represented by most of the book, and computation fit very well together, a taste of things to come.

Examining each chapter, there is not one that fails to impress, either through the use of examples, or for the care taken to condense much development into an effective, affordable tutorial style. Some contain evidently summary information in a rapidly changing area. The book makes a good attempt at keeping mineralogy current, but perhaps the most obvious conclusion is explicit in the subtitle – that physics and chemistry have a major role to play in our understanding of bulk Earth and planetary processes.

A. JEPHCOAT

Adams, A.E. and MacKenzie, W.S. *A Colour Atlas of Carbonate Sediments and Rocks under the Microscope*. London (Manson Publishing), 1998, 180 pp. Price (hardback) £48.00 (ISBN 0-470-29622-4); paperback £24.95 (ISBN 0-470-23749-X)

This is the latest contribution in an outstanding series of colour atlases illustrating and describing rocks and minerals. It deals entirely and fairly comprehensively with the illustration of the minerals, detrital and biogenic components, sedimentary and diagenetic textures and structures found in limestones and in dolomites. As with the previous titles in this series the quality of colour illustration is of the highest standard. The images are sharp, and the colour reproduction is excellent.

The petrography of carbonate rocks is often regarded as an art that is learnt through extensive experience. No amount of measuring of optic axes, birefringence and refractive indices or isotope geochemistry and X-ray diffractometry will enable you to identify, for example, recrystallized fragments of dasyclad algae that may provide you with the vital clues for your palaeoenvironmental interpretation. However, a very well illustrated colour atlas is still one of the best ways to learn these skills as part of a course in carbonate petrography.

This 180 page book firstly deals with the myriad of different skeletal and non-skeletal grain types that typify carbonate rocks (182 photomicrographs). The text in the next section gives a brief overview of diagenesis (including dolomites and evaporite replacements) and is accompanied by 109 photomicrographs most of which benefit from sections with blue resin impregnation and Alizarin Red S and potassium ferricyanide staining. The book finishes with three short sections on porosity (15 images), limestone classification (5 images) and cathodoluminescence (7 paired photomicrographs). With this coverage and quality of illustration the book is clearly going to be of great value to students, teachers and professional geologists who need a reference guidebook on carbonate rocks.

In detail, I have some criticisms of the atlas: the main one is that each illustration only has the most basic title (stained or non-stained), PPL or XP, stratigraphic and geographic location and the scale) and I would prefer to see the blank space next to each micrograph used to describe and interpret specific features within each image and for these to be identified on each micrograph by an arrow or letter. As I see it, and as I see my students using this book, it is driven by the quality of the illustrations, and not by the text, therefore the images need annotating so that the main features can be quickly understood. This would also give the opportunity of commenting on particular depositional textures or structures illustrated in a slide which otherwise is being used to illustrate a particular bioclast.

I found the limestone classification section rather weak and with some surprising errors which I hope can be redressed in future editions: Figs 313 and 314 are clearly packstones and not, as mentioned in the text, 'grainstones' as they have grain-supported textures and muddy matrices. Figures 61 and 69 are cited as being good examples of 'bioclastic wackestones' but 61 is clearly a packstone as is confirmed in the accompanying text which describes the stacked shells and many might argue that areas of 69 are in fact grain-supported, not matrix-supported and a better example could have been found. Figure 37 is cited as being a good example of a grainstone but the illustration clearly shows a

packstone and this fact is confirmed by the accompanying text. Thankfully I found the text elsewhere to be clearly written and accurate.

The final part of a reviewer's job is to assess how this new text compares with previously published atlases on carbonate petrography. The classic text in this field is the American Association of Petroleum Geologists' Memoir 27: 'Colour illustrated guide to carbonate rock constituents, textures, cements and porosities' edited by P. Scholle. This was published over 20 years ago, but is still in print and is amazingly good value at £17, with a hard cover. The main differences between the two books are the high quality of the images in Adams and MacKenzie and the greater range of non-skeletal grain types illustrated. However, Scholle's Memoir 27 has the useful addition of a greater range of bioclasts, the illustration of ancient and modern examples and the use of SEM micrographs which are not used in Adams and MacKenzie.

Dolomites, dedolomites and evaporite replacements get more or less the same treatment in both texts but Adams and MacKenzie have a more comprehensive treatment of other diagenetic textures and have the benefit of cathodoluminescence micrographs. In summary the cost and breadth of treatment in Memoir 27 still make it a good buy, but the quality of illustration and the accompanying text in Adams and MacKenzie perhaps make it worth paying the extra £7. For those who already have Scholle's memoir on the shelf, it is well worth hanging on to. For those requiring more detail on different fossil groups, then Horowitz and Potter ('Petrography of Fossils') is still the best atlas with good quality black and white photomicrographs but this is no longer listed by Springer Verlag.

Finally this seems a good subject for a well indexed CD-ROM and I look forward to a digital version for student use in the future.

D. BOSENCE

The Photo Atlas of Minerals. (on CD-ROM) Los Angeles County Museum of Natural History Foundation. Price US $49.95 + $9.95 for latest upgrade (+ $7.50 shipping)

Many geologists are first attracted to the subject by the sight of stunning mineral specimens in books and museums. The 'photogenic' aspect of amateur geology is an important influence on all earth scientists at some point in their formative years. The Photo-Atlas of Minerals is a CD-ROM format pictorial reference of minerals, which centres on a database of 800 images of mineral samples. There are data entries for some 3600 other minerals for which there are no photographs. The CD is PC-based, compatible with Windows 3.1 or higher, and easy to use. The CD-ROM contains the database, a glossary of mineralogical terms (relevant to hand specimens), an identification game and a slide show. Hypertext linking allows unfamiliar terms to be explained effortlessly.

The images chosen are all impressive and pleasing but (unfortunate to my professional eye) lack scale. A large variety of minerals is included. Some mineral groups are explained (such as feldspar) and this is helpful. The feldspar page gives the main end-members which can then be hypertext linked. However, others are puzzlingly absent – I could not find entries for pyroxene, amphibole or garnet, for which only the names for end-members are present. Variety names are also absent; e.g. the image shown for 'microcline' is described as amazonite, but amazonite itself is not an entry in the database. Each mineral usually has a selection of images, allowing a fuller appreciation of the variability in natural samples.

The database can be searched against several specific criteria, such as hardness, density etc., and cross referencing of these searches can be used for basic mineral identification. However I would not recommend it as an identification tool since the criteria are quite prescriptive and inflexible. An identification game, common to many CD-ROM packages, is included, but is of limited use. The images rarely truly represent mineral lustres and so the ID game becomes largely guesswork. I have to admit that in four attempts I did not get a single mineral correct!

As a teaching tool, this CD-ROM would have limited use. The glossary is helpful and the photogenic nature of the images is a key attraction in a subject that can appear staid and dry. However, the absence of key terms such as pyroxene and amphibole makes it of little use and the ID game would serve only to demoralise less confident students.

The Photo-Atlas is aimed at the amateur market and fills an important niche – its contribution lies in fostering the subject among the general public and inspiring the earth scientists of future years.

A.A. FINCH