The book concludes with two chapters on enviromnental studies. Jambor and Blowes (Chapter 12) cover sulphide-bearing mine waste. They outline the mineralogy of mine waste and the theory and procedure for establishing its acid generating capacity. The meat of the chapter is concerned with the reactivities of the key minerals in the mine waste environment. Finally, Nesbitt and Jambor (Chapter 13) highlight the role of mafic minerals in neutralizing acid rock drainage and suggest they have significant intermediate to long tenn neutralizing capacity. Base metal sulphide-rich waste from the Waite-Amulet mine, Quebec, is used as an example and mineral-pore water reactions are discussed.

Overall the book provides a valuable introduction for research students and junior professionals and a useful refresher for 'seniors' who find it increasingly difficult to keep up with advances outside their own speciality. However, while recommending the book I would also suggest that those who can attend the next appropriate short course and see this fascinating kit in action.

C. M. RICE

runin, R. F. *Shock Compression of Condensed Materials*. Cambridge (Cambridge University Press), 1998. xi + 165 pp. Price £30.00. ISBN 0-521-58290-3.

Shock studies of condensed matter originated in the USA and former Soviet Union during and shortly after World War II. The original urgency and motivation has obvious links with the rush to catalogue the properties (in particular their equations of state) of the various materials used in the construction of nuclear weapons. The outcome of these early shock experiments in both the former Soviet Union and USA, and their continued application since the early work, is now a fully developed field of high-pressure research that includes not only dynamic laboratory experiments, but underpins more recent static high-pressure techniques with the diamond-anvil cell by providing the link to the primary pressure scale. For those interested in the origin of these fundamental condensed-matter studies, R.F. Trunin has written a compact volume summarizing the beginnings of the work and the results that were achieved in a special period of Soviet scientific achievement. Experiments evolved from high explosive sources to using underground nuclear explosions themselves as sources, generating pressures as high as 10 TPa (10000 GPa, 100 Mbar). The book focuses on the development of methods and their results, with occasional data from similar experiments elsewhere, and provides an introduction to shock-wave theory and Hugoniot states.

His style is concise and combines in the early chapters a brief description of the political motivation with the clear scientific and experimental challenge faced by experimentalists at the Russian Nuclear Centre in Sarov (Arzamas-16), Novgorod region. A large part of the book (Chapters 3 and 4) covers the simple metals: their technological importance determined that they were exhaustively studied. But this also led to the first direct experiments at Earth's core conditions and the data on iron were fundamental to early geophysical papers (with L.V. Al'tshuler) on the properties and phase diagram of iron at high pressure and temperature — problems that have not been fully resolved even today. The text contains numerous historical remarks both in terms of the original ideas of interpretation, and the outcome of the experiments. Many of the data are presented as numerous shock velocity (D)–particle velocity (U) plots.

There are shorter chapters on metal alloys, porous metals and metal hydrides (these materials also referenced in terms of historical significance for planetary interiors) as well as a chapter covering minerals (oxides, halides, sulphides). The response of rock-types to shock waves is also briefly discussed and the book closes with summary information of organic solids and various liquids — and hydrocarbons.

The book contains a useful bibliography tracking numerous references to published work in Soviet journals. In line with the suggestion on the cover, this book will provide a reference for condensed matter physicists, materials scientists, earth scientists and astrophysicist — at least those with an interest in the properties of matter at high density.

A. JEPHCOAT

Paquet, H. and Clauer, N. (Eds) *Soils and Sediments: Mineralogy and Geochemistry*. Berlin, Heidelberg and New York (Springer Verlag), 1997. xx + 369 pp. Price £68.50. ISBN 3-540-61599-7.

Soils and Sediments is a multi-author volume dedicated to the late Georges Millot. Millot was the founder of the leading European school of clay geology based at the University of

Strasbourg which specialises in low-temperature earth surface geochemical processes. The authors were his close research collaborators, and each has contributed a review chapter on aspects of Millot's exceptionally broad interests. There are fifteen chapters which divide into two general groups. Chapters 1–10 deal with different aspects of soil and weathering processes at various scales, whereas Chapters 11–15 are concerned with more geological aspects. In Chapter 1 Georges Pédro reviews *Clay minerals in weathered rock material and in soils*. Hélène Pacquet and Alain Ruellan then deal with *Calcareous epigenetic replacement in soils and calcrete formation* (Chapter 2). *Laterites and bauxites* (Chapter 3) are reviewed by Bruno Boulangé, Jean-Paul Ambrosi and David Nahon more specialized aspects are dealt with by Francis Weber (*Evolution of lateritic manganese deposits*, Chapter 5), Jean-Jacques Trescases (*The lateritic nickel-ore deposits*, Chapter 6) and Fabrice Colin (*The behaviour of gold in the lateritic altero-sphere*, Chapter 7). More general and geographical aspects of certain soils are reviewed by René Boulet, Yves Lucas, Emmanuel Fritsch and Hélène Paquet (*Geochemical processes in tropical landscapes: role of soil cover*, Chapter 4) and by Jean-Claude Leprun (*Comparative ecology of two semi-arid regions: the Brazilian Sertão and the African Sahel*, Chapter 8). The first group of chapters is rounded off by Daniel Jeanette discussing the *Importance of pore structures during the weathering process of stones in monuments* (Chapter 9) and by Médard Thiry on *Continental silicifications* (Chapter 10). The geological chapters (11–15) start with Marie-Madeleine Blanc-Valleron and Médard Thiry discussing the *Paleocene continental deposits in France* with reference to their clay minerals, palaeoweathering, palaeolandscapes and climatic sequences. *The genesis of sedimentary apatite and phosphate-rich sediments* is reviewed by Jacques Lucas and Liliane Prevot-Lucas in Chapter 12. Hervé Chamley brings us up to date in his well-known text book *Clay Sedimentology* in his review of *Clay mineral sedimentation in the ocean* (Chapter 13). In Chapter 14 Norbert Clauer and Sam Chaudhuri revisit, *Isotopic dating methods of sedimentary minerals for stratigraphic purpose*. Bernard Kübler (Chapter 15) brings the volume to a close with his discussion of *Concomitant alteration of clay minerals in organic matter during burial diagenesis*. Each chapter contains an extensive reference list, and there is a simple and just adequate general index. The book is essential for everyone who is seriously interested in soils, sediments and the geochemical and geographic factors controlling their distribution and development. These fifteen reviews are not only a timely reminder of Georges Millot's achievement in marrying soils, sediments and low-temperature geochemistry in his seminal textbook *Géologie des Argiles* (1964), but they will also bring you up to date with a wide range of pertinent and interesting topics. *Soils and Sediments* is to be recommended. C. V. JEANS

Mandarino, J. A. *New Minerals 1990-1994*. Tucson, Arizona (The Mineralogical Record Inc.), 1997. ix + 220 pp. Price $US20.00 + $2 postage.

This book is a compilation of new mineral species published in the years 1990 to 1994; there are 219 of them and the book is arranged to accommodate one species per page in an alphabetical arrangement. The information is in the form of notes, to include the name, chemical formula, locality, details of the occurrence, general appearance, physical, chemical and crystallographic properties, origin of name, and reference. As past chairman of the Commission on New Minerals and Mineral Names of the International Mineralogical Association, the author holds records of the data submitted to the Commission but has used the published accounts as the basis for the information presented, although he admits to using the IMA files for information which the authors failed to record in their published accounts.

For many of the species, an idealized crystal drawing is presented, these being produced by the author using the SHAPE crystal drawing program applied to the crystallographic data in the published descriptions.

The introductory pages provide a very useful guide to the pitfalls likely to be encountered by people describing new species. They also give a revealing insight into the geographical distribution of the species described — the top three countries recorded as the type localities of the 219 species are Russia (46), USA (34) and Italy (19). At the other end of the scale, there is one lunar mineral.

The book provides a welcome compilation of recently published data, and will become even more useful if a regular series ensues.

A. M. CLARK