individual contributions and the way they were organized. For example, why is there no list of the titles of photographs? Why is there no list of localities? Why have individual contributions been allowed to vary so much in the information they provide on context and location? Was it never considered that readers might wish to collect samples of their own of figured material? The so-called subject index (it also contains the names of contributors) is inadequate. Almost all the items listed under USA, for example, are repeated without cross reference under Appalachian.

The Atlas is without doubt a very useful addition to the literature on cleavage. It probably is too expensive for individual purchase, but ought to be in libraries used by structural and metamorphic geologists. It must be much regretted, however, that it is not better designed to aid systematic use. All I can suggest to the new reader is that he gets to know the photographs well enough to be able to impose his own system on them.

R. NICHOLSON

Sunagawa, I., ed. *Materials Science of the Earth's Interior.* Tokyo (Terra Scientific Publishing Company) and Dordrecht, Holland (D. Reidel Publishing Company), 1984. 653 pp. with figs. and plates.

Although data on growth, morphology, and properties of natural and artificially obtained crystals are amply presented in the available scientific journals and in special monographs, geoscientists have always looked for a condensed, comprehensive treatment of such topics, specifically applied to problems arising from studies of processes operative in the Earth's crust and interior. The book edited by and with the participation of the well-known specialist Professor Sunagawa fills such a gap. The book comprises articles by leading scientists in Japan from nine research groups, along three principal lines: experimental studies of the material of the Earth's interior, characterization of materials derived from the Earth's interior; and a theoretical group. The topics of the book are dealt with in seven chapters: silicate melts; crystal growth and synthesis of large single crystals; electron and crystal structures; analysis of thermal and stress histories; solid materials in the Earth's interior; interaction between solid and fluid components; and technical developments. All articles within each chapter are of particular interest, each one backed by numerous references and original contributions. Titles like Structures and some physical properties of silicate melts of geological interest (I. Kushiro), Growth of crystals in nature (I. Sunagawa), High-temperature crystallography of olivines and spinels (Y. Takeuchi *et al.*), Application of transmission electron microscopy to the studies of decomposition and exsolution of minerals (N. Morimoto and M. Kitamura), Ultra-high pressure phase relations of the system MgO–FeO–SiO_2 and their geophysical implications (E. Ito), Petrology of materials derived from the Upper Mantle (K. Aoki), Hydrothermal synthesis and phase relations of the polymetallic sulphide system (A. Sugaki *et al.*), and many others give a cross-section of the content of the book. It would be no exaggeration to say that the latter provides an excellent overview of present-day scientific thought in Japan in this field.

The book is suitably illustrated and much credit is due to the publishers for their fine printing and layout. The book is primarily intended for geoscientists, but it could definitely benefit scientists in fields, such as chemists, physicists, geophysicists, crystallographers, etc. who would like to have an up-to-date idea of the problems tackled for elucidation of the state and the dynamics of materials making up the Earth's crust and interior. As it is said in the preface, it 'will form a good starting point of future development of the science'.

I. KOSTOV

Donnay, G., and Donnay, J. D. H. *The M. A. C. Crystallographic Laboratory Manual.* Montreal (Mineralogical Association of Canada), 1984. 84 pp., 15 figs., 8 photos, 4 charts. Price $15.00 (Canadian).

This is a handbook of practical assignments designed to form part of a course in crystallography for students of mineralogy. It was originally prepared for students of McGill University, and has now been reprinted by the Mineralogical Association of Canada for wider use. The manual contains eleven exercises, covering morphological, structural and X-ray crystallography. The morphogical exercises include the identification of crystal forms from wooden models, the derivation of crystal forms by drawing stereograms, and the use of the Wulff net to study a triclinic crystal. X-ray exercises include the measurement and interpretation of precession, rotation, Weissenberg, and powder photographs.

Each assignment is a substantial exercise which on completion would give the student a good understanding of the topic studied. For example, in the first assignment the student is asked to learn to identify and name all forty-seven crystal forms. Background information and guidance are given with each exercise, including many practical hints