

**Radiocrystallographie. Maîtrise de physique.** By PIERRE DUCROS. Pp.ix+143. Paris: Dunod, 1971. Price 26 fr.

The book is intended to give a preliminary background in X-ray crystallography to the student studying for the French Master's degree ('Maîtrise') in either physics, chemical physics or earth science. It comprises 14 chapters plus a brief appendix on the focusing of X-ray or neutron beams. Each chapter contains schematic figures and diagrams and a few exercises.

Starting from an introduction on the geometrical aspects of crystallography, the contents cover: a summary of the properties of X-rays; a mathematical survey with special emphasis on Fourier-transform methods; a discussion of the principles of X-ray diffraction from crystals; a description of some photographic techniques; the derivation of the crystal symmetry; the principles of X-ray structural determination; and, finally, a brief account of electron and neutron diffraction.

In general, the contents are clearly presented. Chapter 3, on the properties of the Dirac  $\delta$ -function and of the Fourier transforms, is elegantly developed.

The book is useful as a relatively easy introduction to X-ray crystallography. However, in the opinion of the writer, a rather more complete presentation of the geometrical and physical aspects should have been concluded with a discussion of the phase problem in some depth, and with the presentation of some of the outstanding results that X-ray crystallography has achieved in the field of chemistry over the last few decades.

In fact, the reader may be left with the impression that the subject is somehow too abstract.

The book contains a relatively large number of mistakes.

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**X-rays, electrons and crystalline materials.** By T. F. J. QUINN. Pp.155. London: Butterworths, 1971. Price £1:30.

The idea of this book is a good one – to give undergraduates the basic principles of the application of X-ray and electron diffraction and electron microscopy to industrial problems. It is important that students should know that the subjects are not merely of academic importance. However, the book is too brief to do justice to its theme; the elements of crystallography and of three-dimensional diffraction are dealt with in too condensed a fashion to be really useful for a newcomer to the subject.

The author would have been better advised to refer to other works for the basic elements of the subject, and to use the space thus made available for more concrete examples of industrial applications, explaining clearly what has been done and giving details of experimental methods and techniques. The book would then have had much more of an air of reality about it, and this could have inspired some students with the desire to search out the basic principles for themselves.

The book is also marred by some infelicities in the dia-

grams. Figs. 1-7, 1-8, 1-13a and 1-19 are clearly incorrect, and a cube could not possibly look like the drawing shown in Fig. 1-10.

It is a pity that this good idea has not received a more successful treatment.

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**Modern diffraction & imaging techniques in material science.** Edited by S. AMELINCKX, R. GEVERS, G. REMAUT AND J. VAN LANDUYT. Pp. viii. + 745. Amsterdam: North Holland, 1970. Price £12-60, \$30-00, f 108.

This large volume contains the proceedings of a NATO summer school held at the University of Antwerp during 1969. Although a good deal of background material is included by the authors of each chapter, since the objective of the school was to teach recent developments in this field at an advanced level, then necessarily a fair amount of associated reading is required of the 'student' new to the field.

Prominent specialists in their subjects present chapters on kinematical (Gevers) and dynamical (Whelan and Howie) theories of electron diffraction and the application of these theories to problems such as computed electron micrographs (Humble), phase transitions (Thomas and Wayman), Kikuchi effects (Thomas), identification of defect clusters (Wilkins) and planar interfaces (Amelinckx). This description of the theories and applications of relatively conventional electron microscopy occupies about half of the book. The remainder of the book is divided amongst descriptions of various techniques including low energy electron diffraction (Estrup), X-ray topography (Lang and Authier), X-ray and neutron diffraction (Guinier), scanning electron microscopy (Booker), mirror electron microscopy (Bok) and both field emission and field ion microscopy (Müller).

The theory and practice of electron diffraction and microscopy has now been the subject of intense interest for several decades and, not surprisingly, a sophisticated level of interpretation has been reached. This situation is reflected accurately by the book, and the chapters on electron microscopy and diffraction explain clearly and concisely many of the effects that can be observed. This part of the book uses much of the same formalism described in 'Electron Microscopy of Thin Crystals' (Hirsh, Howie, Nicholson, Pashley & Whelan, 1965 London: Butterworth), and so makes a useful source of more recent and also of supplementary information.

On the other hand, both field ion microscopy and low energy electron diffraction are newer subjects of interest and have reached much lower levels of understanding. LEED is a technique which is giving very much information about the structure of surfaces and it is unfortunate that the opportunity was not taken to include some of the theoretical work which has been done over the past two or three years. Some of this work has made efforts to extend both from and to-

wards the high energy dynamical treatments described by both Howie and Whelan in the book, and the comparison would have been very instructive.

The principles and applications of scanning electron microscopy are set out very clearly by Booker in three consecutive chapters. The very wide range of applications of these instruments is demonstrated with an interesting variety of micrographs.

The book is beautifully produced and the quality of the prints is very high, but then this should be the case for a

price of £12.60. It can be recommended to any scientist interested in the structure of materials and the techniques that can be deployed to elucidate this structure and it is an essential part of any library of works on electron microscopy.

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## Notes and News

*Announcements and other items of crystallographic interest will be published under this heading at the discretion of the Editorial Board. The notes (in duplicate) should be sent to the Executive Secretary of the International Union of Crystallography (J. N. King, International Union of Crystallography, 13 White Friars, Chester CH1 1NZ, England).*

### *Acta Crystallographica Journal of Applied Crystallography*

Subscribers wishing to obtain their copies of *Journal of Applied Crystallography* or *Acta Crystallographica* by air mail should write to the Subscription Department, Munksgaard International Publishers Ltd., 35 Nørre Søgade, DK-1370 Copenhagen K, Denmark, or to Polycrystal Book Service, P.O. Box 11567, Pittsburgh, Pa. 15238, U.S.A. for details of the additional cost.

### **New Volume of *Structure Reports***

Volume 27 of *Structure Reports* covering the literature for 1962, was published in December 1971, at a price of 200 Netherlands Guilders. Orders may be placed with A. Oosthoek's Uitgevers N.V., Domstraat 5-13, Utrecht, The Netherlands, with Polycrystal Book Service, P.O. Box 11567, Pittsburgh, Pa. 15238, U.S.A. or with any bookseller.

Full details of various price reductions for standing orders and the ten-year sets, and of personal prices for *Structure Reports* were given in *Acta Cryst.* A24 (1968), 703 and B24 (1968), 1398 and in *J. Appl. Cryst.* 1 (1968), 196. Note, however, that the discounts for the ten-year sets continue to be available.

### **Advanced Study Institute on the Experimental Aspects of X-ray and Neutron Single Crystal Diffraction Methods, Aarhus, Denmark, 31 July - 11 August 1972**

This institute is intended primarily for advanced students or young research workers with research experience in one or both of these branches of crystallography. About 80 participants can be accommodated and they will be given the opportunity of assessing the potentialities of the most recent experimental developments. Ample time will be provided for discussions. The lectures will be: S. Abrahamsson (Göteborg), U. W. Arndt (Cambridge), P. Coppens (Buffalo), D. Feil (Twente), J. B. Forsyth (Harwell), W. Hamilton (Brookhaven), W. Hoppe (Munich), G. Lenhert (Vanderbilt), H. Maier-Leibnitz (Grenoble), S. W. Peterson (Argonne), G. S. Pawley (Edinburgh), R. Thomas (Brook-

haven), B. T. M. Willis (Harwell) and R. A. Young (Georgia). Requests for application forms or further information should be directed to Professor S. E. Rasmussen, Department of Inorganic Chemistry, Institute of Chemistry, Aarhus University, 8000 Aarhus C, Denmark. The deadline for applications is 1 April 1972.

### *World Directory of Crystallographers*

The fourth edition of this Directory appeared in November 1971. It contains short biographical data of 6,982 scientists from 57 countries, arranged in alphabetical order by countries, and individuals within the countries. The biographical data include (a) full name and title; (b) year of birth; (c) information on field of study, university and year of highest degree; (d) present position, name and address of institution; (e) in some cases private address; and (f) major scientific interests.

Individual copies of the World Directory of Crystallographers can be obtained from A. Oosthoek's Uitgevers N.V., Domstraat 5-13, Utrecht, The Netherlands, or Polycrystal Book Service, P.O. Box 11567, Pittsburgh, Pa. 15238, U.S.A., at a cost of U.S. \$5.00, post free.

### **Second International Conference on the Properties of Liquid Metals, Tokyo, Japan, 3-8 September 1972**

This conference will be held at the conference hall of the Science Council of Japan in Tokyo under the auspices of the Japan Institute of Metals, The Physical Society of Japan and the Iron and Steel Institute of Japan. The main subjects covered by the conference will be structures, electronic states, electronic and atomic transport properties and thermodynamic properties of liquid metals and alloys, and melting phenomena of metals. Persons wishing to present contributed papers must return the appropriate form to the organizers before 15 April 1972. The proceedings of the conference will be published about March 1973. Further information may be obtained from Professor M. Tanaka, Secretary of the Organizing Committee, Department of Applied Science, Faculty of Engineering, Tohoku University, Sendai 980, Japan.