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 δ-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 diagrams. Figs. 1·7, 1·8, 1·13*a* 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 (Wilkens) 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-