

analytical capabilities have cleared the way for more effective and far-reaching applications.

The areas considered in the report are biological macromolecules, chemical crystallography, diffraction physics, earth sciences, and materials research. In addition, there are parts devoted to the results of the chemical crystallography questionnaires, the teaching of crystallography, and a brief discussion of crystallographic computing.

A limited number of copies of *Status and Future Potential of Crystallography* are available from the Office of Chemistry and Chemical Technology, National Research Council, 2101 Constitution Avenue, N.W., Washington, D.C. 20418, U.S.A.

## Book Reviews

*Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS2 9JT, England). As far as practicable books will be reviewed in a country different from that of publication.*

**Practical electron microscopy in materials science**, Tomes I, II et III. Par J. W. Edington. Londres: Macmillan, 1975 (Philips Technical Library). Prix £9.00 par tome.

Les trois fascicules 21×29 cm de la monographie de J. W. Edington ont respectivement 34, 122 et 112 pages. Ils sont remarquablement illustrés par d'excellentes photographies qui seront très utiles aux enseignants recherchant de bons exemples des phénomènes rencontrés dans la microscopie électronique des solides cristallisés. Au cours de la lecture de cette monographie, on se pose la question suivante: est-ce un aide-mémoire pour le spécialiste ou un ouvrage accessible aux débutants? Malheureusement, on ne peut pas répondre en disant: les deux. Réaliser ce double but aurait été admirable mais aurait demandé autant de rigueur scientifique que des démonstrations simples et pédagogiques. Or, la rigueur est parfois en défaut dans le texte ainsi que dans certains schémas: le spécialiste s'arrêtera parfois sur des ambiguïtés qui, si elles avaient été évitées, n'auraient certainement pas rendu le texte plus ardu pour le débutant. Cer-

tains spécialistes de la métallurgie se réjouiront de voir la monographie entièrement consacrée à cette discipline, mais les autres seront déçus de ne pas y trouver traité le cas des cristaux minces (< 100 Å) où la théorie cinématique peut être utilisée.

Cet ouvrage apporte une très vaste documentation photographique et bibliographique qui peut venir compléter très positivement d'excellents ouvrages existants et encore inégalés sur la microscopie électronique des cristaux minces.

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**Applications of liquid crystals.** By G. Meier, E. Sackmann and J. G. Grabmaier. Pp. iii + 164. Springer-Verlag, 1975. Price \$23.00.

This is a timely book. The last few years have seen an increased interest in the technological exploitation of the unique properties of liquid crystals. In particular, the electro-optic properties have promised display devices operating at such a low power that it was impossible for them to be commercially ignored. Now with the advent of suitable mesogenic compounds giving stable, colourless, room-temperature liquid-crystal phases, these have become feasible and the day of the digital wrist-watch is here. But as this volume shows, liquid crystals have far more to offer than wrist-watch displays and trivial iridescent plastic toys.

The first part of the book, by Meier, gives an introduction to the relevant physical properties of liquid crystals. Since the nematic phase features largely in subsequent chapters, it is naturally given prominence here. This section, like the rest of the book, is concise and to the point. There is no historical introduction and no attempt at a comprehensive survey of mesophase types; smectic phases appear at the top of page three and are dismissed 16 lines later.

The second section, by Sackmann, outlines the scientific (as opposed to the

technological) applications. He describes the use of liquid crystals as anisotropic solvents for spectroscopic studies and for gas-liquid chromatography.

The final section, by Grabmaier, deals with medical and technological applications. He describes the utilization of the temperature-sensitive colouration of the cholesteric phase. A range of applications of thermography is outlined, including cancer diagnosis and the localization of the placenta. Less obvious perhaps are the uses of this technique for studies of flow patterns in wind-tunnel experiments and in the direct visualization of microwave fields. The remainder of this section will be for many readers the most valuable part of the book. It is a comprehensive survey of electro-optic devices, their principles, construction and operating characteristics.

This volume is well illustrated with line drawings and black and white photographs. The omission of colour prints, presumably for reasons of economy, is unfortunate in view of the colour phenomena described. One could quibble about the written styles of the authors. In places the text shows the unmistakable evidence of having been written by someone to whom English is not the native tongue. Here and there a curious construction or an inappropriate preposition intrudes and words like 'chiralic' and 'etheric' appear. But in fairness it should be pointed out that this scarcely detracts from the value of the book. The only instance which could possibly lead to any confusion is the reference to a kaleidoscope (on page 109) but from the context it should be clear that allusion is to a type of pre-cinematograph moving-picture machine rather than the children's toy employing angled mirrors.

In the preface the authors of this book make the claim that it will appeal 'not only to physicists and chemists (especially spectroscopists) but equally to those in the manufacturing and processing industries (including electrical engineers)'. And they are right.

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