numerous and of a good standard the basic concepts are put over quite well. However in his preface the author states that, quite deliberately, his material is a collection of theory and recipes and sometimes this reviewer felt that the theory was a little underplayed. For example, Miller indices are introduced without any reference to the underlying reasons for their existence and a reader fresh to the subject might well wonder at the good fortune that made them such small integers.

The next 160 pages give a very complete and highly satisfactory explanation of the optical properties of uniaxial and biaxial crystals and their behaviour under the orthoscope and conoscope. Once again the quantity and quality of the diagrams help greatly to clarify the subject matter.

Final chapters are devoted to optically active crystals, the study of crystals mounted on stage goniometers and, finally, a detailed procedure for the systematic microscopic examination of transparent materials.

This book is highly recommended to all crystallographers. Even the least 'optically aware' crystallographer would do well to have it handy as a work of reference.

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Einführung in die Kristallphysik. By W. KLEBER, K. MEYER and W. SCHOENBORN. Pp. 209. Berlin: Akademie-Verlag, 1968. Price (soft cover) DM 17.

This book is written as an introduction to crystal physics for undergraduate and graduate students majoring in physics, chemistry and mineralogy.

The first chapter by Schoenborn on *Elemente der Kristallsymmetrie* deals with crystal classes including those of the magnetic type. In the second chapter *Phänomenologische Darstellung der Kristalleigenschaften* the same author, after a brief mathematical introduction, discusses certain crystal properties by means of tensors. This includes, for example, pyroelectricity, pyromagnetism, conductivities, optical activity, double refraction, piezoelectricity, elasticity, *etc.* Chapter 1 appears too brief and superficial but the second chapter gives a good discussion of the mentioned physical properties.

Kleber has written Chapter 3 *Gitterphysikalische Eigenschaften*. He discusses crystal bonding, potential and vibrations, and elastic, magnetic dielectric, and optical properties. This is a very brief and rather unproblematic account of the phenomena.

Finally, Meyer gives in Chapter 4, *Realstruktur und einige physikalische Eigenschaften*, a good and brief description of the geometry of crystal defects, their detection and some physical properties due to defects.

Although there is a strong need for a short textbook on crystal physics, I am not sure this book fulfils this purpose, particularly since the material included is not up-to-date. Also, since this book is very brief, it should include a more detailed reference section.

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Crystals and their structures. By ARTHUR P. CRACKNELL. Pp. ix+231. Oxford: Pergamon Press, 1969. Price (hard cover) 45*s*, $7.00, (soft cover) 35*s*, $5.50.

This book deals, at an elementary level and in a descriptive way, with the properties and structures of crystalline and near-crystalline materials.

It is intended as reading matter for advanced sixth-form pupils studying physics or chemistry or as general background reading for first-year undergraduates.

The first two chapters, comprising one third of the book, are concerned with the symmetry of crystals, point groups, Bravais lattices and space groups. The treatment is quite sound but, in the reviewer's opinion, some topics, *e.g.* symmorphic space groups and *d*-glide planes, should have been excluded completely. They were dealt with so scantily that they could not easily be understood and their inclusion added nothing to the overall understanding of the material.

A chapter on the internal structure of crystals gives a brief account of each of the three main types of diffraction experiment, with X-rays, electrons and neutrons and also of electron microscopy. There are useful descriptions of electrostatic lenses and of how a magnetic structure can be elucidated with neutrons. A very important point, not made at all, is that structural information may be difficult to obtain from diffracted data, which is, after all, one of the basic features of structural crystallography.

The next chapter deals with the forces which bind crystals together, ionic and covalent bonding forces and van der Waals forces. The section of this chapter which deals with energy-band theory is done quite well and should be useful at the introductory undergraduate level.

The book concludes with three short chapters, one dealing with defects, dislocations and non-crystalline materials and the final two with coloured symmetry and with elementary group theory.

A useful appendix includes instructions for making cardboard models (octahedron, rhombic dodecahedron, *etc.*) and gives some tips for crystal growing.

The book is interspersed with numerous examples, some fairly difficult, whose usefulness would have been enhanced had solutions, perhaps even worked solutions, been provided.

To summarize – some flaws but a good book on the whole. It can be recommended to that class of readers for which it is intended.

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