solid solution, ageing of solid solutions, crystallization, geometrical associations of crystals, corrosion. The exposition is always clear, but it does assume that the reader has studied quite a range of physical concepts and the mathematical methods of handling these.

Both volumes are produced by an offset process from typescript. This is very legible, but the nature of the process seems to require a thickness of line which does result in a heavy appearance in most of the diagrams. There is, of course, a loss of flexibility and elegance in the text and the mathematics as compared with good printing. What it would be useful to know is the difference in production costs between the two processes for a textbook of this nature. In any case the publication of any subsequent volumes will be awaited with interest, and then it will be possible to view the work as a whole.

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Crystals and Crystal Growing. By Allan Holden and Phyllis Singer. Pp. 320+137 Figs. and 49 plates (7 in colour). New York: Doubleday and Co., Inc. 1960. Price $1·45 ($1·65 in Canada).

This interesting and attractive little paper-backed book is one of the Science Study Series, the primary purpose of which, the publishers state, is to provide a survey of physics within the grasp of the young student, or the layman. Allan Holden is on the research staff of the Bell Telephone Laboratories, and has been concerned for many years with crystals for use in electronic equipment, and with methods of producing them artificially. The book is a result of the many requests which he has received from school teachers and students for suggestions on how to grow crystals. His co-author, Phyllis Singer, teaches art and mathematics, and has contributed the line illustrations. Many of these are based on simple pencil sketches, and this adds to the rather pleasantly informal treatment which is a feature of the book.

Careful general directions are given for growing large crystals of salts, either by the slow evaporation, or by the cooling, of saturated solutions, and using as apparatus nothing more elaborate than glass preserving jars and cotton thread or wire for supporting the seeds. In the form of detailed recipes these directions are applied to the cases of twelve salts, selected to afford examples of cleavage and glide, piezoelectricity, birefringence, pleochroism, optical activity, and the influence of crystal class on habit and the form of etch pits. To aid him in the study of this wide range of crystal phenomena, the reader is shown how to construct simple forms of a contact goniometer, a reflecting goniometer, an apparatus to demonstrate piezoelectricity, a polarimeter, and, as a side-line, a spectroscope in which a tetrahedral crystal of sodium bromate (one of the selected twelve salts) is used as the prism. Directions are also given for making cardboard models illustrating the symmetries associated with the thirty-two crystal classes. All of this is developed against a simple yet adequate background of theory. There are a number of problems (with answers) and suggestions for further reading, while for the real enthusiast some simple research problems are proposed.

The book forms an excellent introduction to crystallography for the enquiring sixth-former or the junior student, particularly if he is prepared to carry out at least some of the experiments described. The treatment is novel and the reverse of forbidding, in a subject which is often made to appear to the beginner very forbidding indeed, and the book should be given a warm welcome.

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Elektronenmikroskopische Untersuchungs- und Präparationsmethoden. By Ludwig Reimer. Pp. viii+300 with 135 diagrams and 20 plates. Berlin–Göttingen–Heidelberg: Springer Verlag. 1959. Price DM. 58.

For some years now electron microscopes have been available with sufficient resolving power to make possible direct observations on the crystal lattice. It is not surprising, therefore, that crystallographers and metallurgists are making increasing use of electron microscopy to supplement classical techniques. However, in order to obtain meaningful results from the electron microscope a sound working knowledge of the electron-optical imaging process is necessary; in addition, complete familiarity is required with the different methods of preparing specimens for electron microscopy.

Dr Reimer's book has been written to provide just this background knowledge, and it can be said at once that an excellent balance has been struck between theory and practice. The style is more that of the learned review than that of the practical manual but this should recommend it to a wider circle of readers, *e.g.*, those who wish to familiarize themselves with the subject in general, rather than master several intricate techniques in detail.

The first half of the book is concerned with the electron-optical aspects of the instrument; focusing properties and aberrations are considered quantitatively, not from the point of view of the designer but from that of the intelligent operator who wishes to gain an insight into the image-forming process so that he can interpret his micrographs, recognize artifacts and assess the resolution likely to be obtained with a given specimen.

The second half of the book deals with specimen preparation, starting with basic techniques such as the production of support films, replica methods and metal shadowing.

Special methods such as centrifuging, freeze drying, differential staining and fixing are systematically treated in subsequent chapters. Practically nothing of any importance has been omitted. The liberal use of simple diagrams has enabled the author to keep the book to 300 pages and to avoid the baffling descriptions often found in German textbooks.

The book is well produced, expensive, and contains an extensive bibliography. It can be confidently recommended to all who are concerned with investigations making use of the electron microscope.

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