Sections that might be in demand as offprints would include, say:

(1) Prof. von Laue's historical introduction (in English);
(2) Introduction to space-group theory with one section of sample space groups;
(3) sin $2\pi nx$, cos $2\pi nx$;
(4) Lorentz polarization factors (direct and inverse);
(5) Introduction to reciprocal-lattice theory;
(6) Wave-length tables in Ångström units;
(7) Atomic scattering factors, calculated and observed;
(8) Absorption coefficients;

and others for which suggestions are invited.

In order that these cheap rates should apply it is necessary for a firm order to be placed, at the time of printing the *Tables*, for the quantities likely to be required within the next ten years, although of course it is not expected that heads of laboratories or of teaching departments will be able to place orders until they know exactly what is available and at what price.

To assist the Commission to make an estimate, however, and to decide what sections should be selected for offprinting, inquiries and suggestions are invited *now* from Universities, Technical and Industrial Research Institutes, etc. What is particularly required is:

(1) An estimate of the possible requirements of the given institute or laboratory over a period of ten years;

(2) The nature of the tables most likely to be required, preferably in terms of the proposed Tables of Contents recently circulated, although suggestions outside these would be welcomed.

All correspondence in this matter should be addressed direct to the Chairman of the Commission (Kathleen Lonsdale, University College, Gower Street, London W.C. 1, England).

American Crystallographic Association Notice

The members of the Crystallographic Society of America and the American Society for X-ray and Electron Diffraction have voted to terminate the existence of these two societies on 31 December 1949 and to form in their place a single society fulfilling the functions of the two existing societies. The name chosen by the members of both societies is *American Crystallographic Association*. The names of the officers of the new society will be announced in this journal as soon as they shall have been elected.

ELIZABETH A. WOOD and WILLIAM PARRISH
Secretaries of A.S.X.R.E.D. and C.S.A.

Acta Crystallographica

Recent issues of this journal have appeared at irregular intervals in order to complete Volume **2** in the calendar year 1949. From January 1950 it is hoped to publish at two-monthly intervals on approximately the tenth day of alternate months.

Book Reviews

Works intended for notice in this column should be sent direct to the Editor (P. P. Ewald, Polytechnic Institute of Brooklyn, 99 Livingston Street, Brooklyn 2, N.Y., U.S.A.). As far as practicable books will be reviewed in a country different from that of publication.

Minerals and How to Study Them. By the late E. S. DANA, revised by C S. HURLBUT, Jr. Pp. 323+x. New York: Wiley; London: Chapman and Hall. 3rd ed. 1949. Price $3·90; 24*s*.

It is a tribute to the original book, published in 1895, that after more than half a century, during which great changes in mineralogy have taken place, it should be considered worth while to reissue it. Moreover, although 'much... has been rewritten', 'an effort has been made to maintain the same point of view for the same reader, the beginner in mineralogy'. Before the book can be fairly judged, one should know what kind of beginner is contemplated; is he an amateur with little or perhaps no scientific background, or a first-year student at a University who will pursue the subject further in subsequent years? The answer can perhaps be inferred from the contents of the book.

In the first place, it is clear that minerals are to be studied by qualitative rather than quantitative methods. The use of the petrological microscope is not described nor is thin-section technique. Optical properties, other than those such as colour which require descriptive terms, are disposed of in two short paragraphs together with an illustration of the double refraction of calcite. Very little chemical knowledge is pre-supposed—in fact, virtually none. The reviewer regrets particularly that the structural aspect of mineralogy is barely mentioned. The reader is told that the crystalline state is essentially one with 'an orderly arrangement of atoms', but he is left completely unaware of the detail in which these arrangements are now known. X-ray tests are occasionally mentioned, but the reader could not be blamed if he thought them similar to medical radiographical tests. It came as a shock to find on p. 14 that the atoms in 'a lump of iron' are grouped into molecules.

It seems very ungracious to multiply these comments on a book which has doubtless been of great value in the past and which now reappears beautifully printed and bound, and possessing a wealth of line diagrams and half-tone reproductions. The reviewer considers that the book will be of most use to amateur collectors of minerals who will find it a clear and stimulating introduction to the subject. The section on crystal growing is especially to be commended. The information contained in the determinative tables is clearly set out, and any intelligent beginner, who follows the advice given, will make a good start in this subject. For university students taking a short course in mineralogy as part of a course in geology or mining, the book may also be recommended, though for such students a more modern background to the whole subject would be an advantage. The book is less suitable for students who intend to pursue the study of minerals

beyond a first-year course. The writer confesses to a feeling of disappointment that the structural work on minerals carried out so strenuously in the last 25 years finds practically no place in this introduction to the subject.

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Gmelin Handbuch der anorganischen Chemie. Selen *B* 2: Die Verbindungen des Selens. Pp. xxviii+195. Clausthal-Zellerfeld: Gmelin-Verlag. 8th ed. 1949. Price DM. 40·60.

This handbook claims to be based on about 1900 journals, and on standard works such as the *International Critical Tables, Landolt Börnstein Tabellen, Strukturberichte* and the *Tables Annuelles*, up to 1 January 1948.

In addition to a description of the chemical properties of various compounds, a comprehensive account is given of important physico-chemical data. These include properties of the solid state such as data for crystal chemistry, thermal transformations in the solid, vapour pressure, entropy of fusion, molar heat capacity, coefficient of expansion, and solubility in various solvents. Special properties such as the electrical conductivity, photosensitivity and magnetic susceptibility of mixed crystals of Se/S are also included where relevant.

The standard achieved for the section on selenium compounds is high and if it can be maintained the eighth edition of this handbook should be even more valuable than its predecessors for workers in inorganic and physical chemistry, and in various branches of chemical physics.

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Crystals and X-rays. By K. LONSDALE. Pp. viii+99, with 138 figs. and 13 plates. London: G. Bell and Sons, Ltd. 1948. Price 21*s*.

This little book is divided into seven chapters: I, Historical Introduction. II, Generation and Properties of X-rays. III, The Geometry of Crystals: X-ray Methods of Investigation. IV, Geometrical Structure Determination. V, Determination of Atomic and Electronic Distribution. VI, Extra-structural Studies. VII, The Importance of the Study of Crystals.

In the foreword, the author says that the book 'is not a textbook for advanced students of X-ray crystallography', but, rather, 'is designed to interest those who do not now use X-ray crystallography but who might well do so', and to inspire those who have had the tool of X-ray diffraction put into their hands to use it more intelligently. The book is based on a series of public lectures given by the author at University College, London.

For the scientist not versed in X-ray crystallography, perhaps the most important chapter is the comparatively non-technical 'Historical Introduction'. In this chapter the author not only sketches the history of the development of X-rays and X-ray diffraction, but gives a nicely balanced view of the place of X-rays in modern science. When the evidence is assembled, the debt modern science owes to X-rays and X-ray diffraction is striking indeed. In the reviewer's opinion, this chapter is beautifully done and should be read by all scientists.

The remainder of the book comprises a selection of topics treated in a manner which the author feels best fulfils her desire to represent X-rays and X-ray crystallography to the scientist not versed in this particular field, and to the industrial administrator. The subject-matter should certainly prove stimulating to the scientist, but may be somewhat abstruse at times to the administrator. But if it is abstruse, it at least well represents the remarkable things which can be done with X-rays for industry in the hands of a skilled investigator.

The veteran X-ray crystallographer will probably find that a good deal of the book is a discussion of material quite familiar to him. Yet almost every reader will find a scattering of this subject matter which appears in novel and stimulating form. The penultimate chapter on 'Extra-structural Studies' should be interesting to nearly everyone. It includes particularly engaging treatments of primary and secondary extinction and vibrations of atoms in crystals.

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Theory of Groups and its Application to Physical Problems. By S. BHAGAVANTAM and T. VENKATARAYUDU. Pp. 234. Waltair: Andhra University. 1948. Price ₹ 20.

Despite the great variety of physical subjects to which group-theoretical methods can be applied with advantage, the methods are not widely understood, and even many who use then possess no more than a working knowledge of the technique. Partly, no doubt, this is due to the inadequacy of general literature on the subject, particularly in the English language. Every new book in this field is therefore an important addition. The substance and general plan of the book by Bhagavantam and Venkatarayudu leave very little to be desired. The range of subjects covered is more extensive than to be found in any other single treatise. Besides the application to atomic spectra and the vibrational, rotational and Raman spectra of molecules, there is much material of special interest, such as, for instance, the discussion in Chapter XI of the external and internal oscillations of molecules in crystals, the method given in Chapter XVI of determining the number of permissible (by symmetry) independent constants involved in various covariant physical quantities relating to single crystals (elastic constants, photo-elastic constants, etc.). As to the general plan of the book, the authors have wisely made the mathematical preliminaries short so that the reader's interest is roused by the physical applications, before his patience is overtaxed by purely mathematical developments.

Although intended primarily for readers new to the subject, the text of the book is by no means easy to follow. Though the clarity of the exposition is often admirable, the explanations, particularly as regards the more basic points, are not always sufficient for a clear understanding of the issue. In compressing so much matter in a volume of this moderate size, such difficulties are perhaps not altogether avoidable. However, they are no doubt at