nell en 1948 sous les auspices du National Research Council. Il est évident qu'une telle mosaïque n'a pas la continuité et la logique d'un traité. Seulement, un seul auteur aurait-il eu la compétence et le courage nécessaire pour écrire un ouvrage d'une telle ampleur? Profitons donc sans regret de toute la masse de documents et d'idées que nous offre cet ouvrage: et le laps de temps (trois ans) écoulé entre le Symposium et la publication du livre est une discrète indication des difficultés qu'a dû surmonter le Comité de Rédaction.

Les articles couvrent bien l'ensemble du sujet, aussi bien du point de vue théorique qu'expérimental. On peut regretter, cependant, que la théorie des transformations ordre–désordre ait été omise; pourtant des travaux très nombreux sur ce sujet ont paru depuis quelques années.

Certains des articles constituent d'excellentes mises au point, faciles à lire, et qui intéresseront en particulier les métallographes. Citons par exemple l'article de Seitz sur la diffusion; celui de Smoluchowski sur la germination; celui de Barrett sur les transformations dans les métaux purs; et de Cohen sur la transformation martensitique. La plus longue étude est l'article de Geisler sur la précipitation des solutions solides; c'est là une revue très détaillée et, malgré cela, claire. La bibliographie contient 830 numéros avec une classification méthodique par sujets. Certes, les conclusions de l'auteur sur la structure des alliages durcis, telles qu'elles sont exprimées dans cet article, ne nous semblent pas toutes justifiées. Il n'en reste pas moins que tous ceux qui travaillent cette question auront à se servir des documents qu'a rassemblés Geisler.

La partie théorique a été traitée par Tisza, Meyer, Kirkwood et Price. Ici, ce ne sont pas des mises au point complètes, mais plutôt des articles spéciaux qui exigent du lecteur une bonne connaissance de la thermo-dynamique statistique; un article comme celui de Kirkwood, par exemple, est très concis et ne peut pas se passer de l'étude des nombreux articles préalables.

Signalons enfin les contributions de Kracek, Schairer et Weyl sur les silicates et les verres, qui mettent bien en évidence l'intérêt des problèmes posés par les transitions dans ces corps et leur grande complexité. Les métallographes auront grand avantage à comparer ces équilibres avec ceux des métaux qui leur sont plus familiers.

En résumé, ce livre donne au lecteur un état encore très actuel de la question, bien que sur certains points on sente déjà les trois ans d'âge des mémoires.

Mais si, au cours des prochaines années, certaines idées sont à réviser, ce sera le fruit des recherches qu'un tel livre n'aura pas peu contribué à rendre plus aisées et plus rapides.

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Structural Crystallography. By N. V. BELOV. Pp. 88, with 58 figs. Moscow: Publishing House of the Academy of Sciences of the U.S.S.R. Price 4 roubles.

Academician Belov, lately recipient of a first-class Stalin prize for his scientific work, is one of the leading exponents in the Soviet Union of the art and science of crystal-structure analysis. Having to his credit the elucidation of many complex structures, principally silicates, and many papers on pure crystallography, his method of teaching the elements of structural crystallography is worthy of attention.

Unfortunately, as this monograph contains neither preface nor introduction, it is left to the foreign reader to deduce for himself the purpose for which it is intended. It would appear that the book contains four lectures for postgraduate students, designed to explain the nature and properties of the space lattice, and presumably part of a more comprehensive course.

The whole development is in terms of the geometrical lattice—the first lecture is called 'The crystalline or lattice state'—and is strict and formal, although full of illustration and explanation. Each new concept is exhaustively discussed as it is introduced. By comparison with many authors the leaning towards Euclidean formality is excessive; for example, nearly half of the first lecture is spent in proving by three different methods that a primitive unit cell cannot contain lattice points not situated at its apices. The Laue and Bragg conditions for the diffraction of X-rays are only mentioned as an explanation for the inclusion of the geometry of the reciprocal lattice. This emphasis on lattice geometry reflects Academician Belov's recommendation of the study of the packing of polyhedra as the fundamental method of analysis, although, of course, he does not scorn advanced Fourier techniques.

Geometrical relationships between the elements of real and reciprocal cells are derived in full, as are the transformations of axes and indices. As special cases of the primitive lattice the 14 Bravais lattices are deduced, the hexagonal/rhombohedral question being clearly dealt with. The rhombohedral cell is derived as a doubly-centred hexagonal cell.

The introduction of symmetry elements at a lattice point and their resulting multiplication is studied (both International and Schoenflies symbols are used for describing point groups). The last lecture introduces the various glide planes and screw axes as combinations of point groups and translations but as primary symmetry elements equally with mirror planes and rotation axes. At this point the monograph stops abruptly and space groups are not actually considered.

A few minor misprints were found, including an erroneous reference.

The price (equivalent to about 2 shillings) and the printing (3,000 copies) show that the monograph was intended for a wider public than the Institute of Crystallography and there might well be room for an English translation, as no other book examines so fully the concepts of lattice geometry which are the foundation of any crystal-structure analysis.

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Compendium der Kristalkunde. Von W. F. DE JONG. xii + 260 S. mit 208 Abb. und 40 Tabellen. (Holländisch.) Utrecht: Oosthoek. 1951. Preis gulden 16·50.

Im ersten Teil findet die geometrische Kristallographie unter den Untertiteln: Kristallbeschreibung, Kristall-

berechnung und Kristallzeichnung eine übersichtliche, klare und, an der Enge des Raumes bemessen, völlig ausreichenden Behandlung. Der zweite Teil bringt eine geschichtliche Entwicklung der Kristallstrukturtheorie und die Unterlagen der Kristallstrukturbestimmung mit röntgenographischen Methoden (einschliesslich der Prinzipien der Fourieranalyse und Pattersonprojektion). Der dritte Teil ist der Kristallchemie gewidmet; er bringt alles Wichtige über die verschiedenen Bindungsarten im Gitter, über Raumbeanspruchung und Koordination, ferner eine knappe Beschreibung zahlreicher, gut ausgewählter Strukturtypen; der Erläuterung verschiedener Begriffe der Kristallchemie und den Reaktionen im kristallinen Zustand sind kurze, treffende Bemerkungen gewidmet. Auch in dem der Kristallphysik eingeräumten vierten Teil trennt der Verfasser scharf zwischen der Phänomenologie einerseits und der atomistisch-erklärenden Richtung. Von der Vektorenbehandlung ausgehend werden alle wichtigen kristallphysikalischen Eigenschaften in leichtverständlicher Darstellung beschrieben und behandelt; anschliessend erfolgt, so weit dies möglich ist, eine Deutung der Erscheinungen vom Gitterbau und aus der Gittertheorie heraus. Aufschlussreich ist auch ein kurzer Schlussabschnitt über Entstehung, Wachstum (und Zerstörung) der Kristalle.

Sicher werden Wünsche nach einer breiteren Behandlung dieses oder jenes Abschnittes oder nach Ergänzungen laut werden; der Gesamt eindruck, den man vom vorliegenden Buch gewinnt, ist aber der, das die gut durchdachte, in einem engen Rahmen gehaltene Darstellung alles wesentliche erfasst. Durch gut ausgewählte und reichliche Literaturhinweise wird eine nähere Orientierung in den einzelnen Gebieten leicht zugänglich gemacht. Die reichhaltige Bebilderung beruht überwiegend auf Neuzeichnungen; diese sind sehr einfach gehalten und so sehr übersichtlich und anschaulich. Eine Übersetzung des Buches in die deutsche Sprache wäre sehr wünschenswert, da der deutsche Büchermarkt eines vergleichbaren, knapp gehaltenen Werkes entbehrt; es ist nicht nur den Studierenden, sondern überhaupt den Vertretern der exakten Naturwissenschaften als orientierende und anregende Lektüre zu empfehlen.

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The Interpretation of X-ray Diffraction Photographs.

By N. F. M. HENRY, H. LIPSON and W. A. WOOSTER. Pp. ix+258, with numerous figs. and tables. London: Macmillan. 1951. Price 42s.

This book will be welcomed by many workers in the field of X-ray crystallography. It covers a field crossing many border lines and thereby fills a gap in the existing literature.

The various classical methods for obtaining X-ray photographs and their interpretation, short of actual structure determination, are extensively described, with many examples and problems from actual practice. This latter feature will make the book especially useful to those workers who want to learn about X-ray techniques without being primarily interested in structure work, for example, the ever increasing number of industrial scientists who wish to use this technique as an analytical tool or for texture investigations. Particularly in this connection it is a pity that no account of Geiger-counter methods has been given; in fact this instrument is not even mentioned. One could argue that the book deals with photographic methods, but the ionization chamber, which is certainly less used than the counter nowadays, is discussed. By including Geiger-counter methods, a description of Decker, Asp & Harker's elegant and quick method for pole-figure determination could have been given. Apparently the authors have only included those techniques with which they are thoroughly familiar, and there is certainly much to be said for this standpoint. The reader profits by it because he is given apt warning against the various pit-falls into which the inexperienced traveller may stumble. The effect of twinning on Weissenberg diagrams might have been mentioned; this is often the cause, not only of wrong space groups, but even of wrong cell-constant determinations.

Besides covering the subjects mentioned in the title, the book gives a clear presentation of basic crystallographic and diffraction theory in which I particularly enjoyed the use of adequate mathematics. The qualitative explanation given of deviations of Friedel's law is not quite correct, nor that of the phase shift of the reflected beam with respect to the primary beam.

The many figures are invariably very clear and well-drawn; this will be especially appreciated by teachers in crystallography who know by experience the difficulties involved in this work. Also, the many X-ray photographs are well chosen and reproduced. The printing is good; there are remarkably few misprints. It is a book which will seldom stand idly on the library shelf.

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Einführung in die Kristalloptik.

(Sammlung Göschen, Band 619.) By E. BUCHWALD. Pp. 138 with 121 figs. Berlin: de Gruyter. 4th ed. 1952. Price DM. 2·40.

Part I, following a few introductory pages on the crystal systems, gives an account of the phenomena of double refraction and polarization. The optical properties of calcite are introduced in terms of the ray-surface, but descriptions of the Fresnel-, wave-normal- and index-surfaces quickly follow. Biaxial crystals are described equally fully, with a short section on conical refraction, and this Part concludes with nine pages on the electromagnetic theory. Part II presents an orthodox account of interference phenomena in parallel and in convergent polarized light. Part III contains a brief account of optical activity and absorbtion, and the twenty pages of Part IV outline modern work on the theory of crystal lattices with the particular aim of showing how the phenomena of Part III can be explained. It will be seen that a very large amount of factual information is packed in small volume. The German style is easy, but the appeal of this booklet to English readers will probably be less to beginners seeking an introduction to the subject and