Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (M. M. Woolfson, Physics Department, University of York, Heslington, York YO1 5DD, England). As far as practicable books will be reviewed in a country different from that of publication.

Surface and defect properties of solids. Vol. 3. Senior reporters M. W. ROBERTS and J. M. THOMAS. Pp. viii + 201, Figs. 120, Tables 14. London: The Chemical Society, 1974. Price £6·50.

The third volume of the Chemical Society's series of *Specialist Periodical Reports on the Surface and Defect Properties of Solids* provides some readable and thought-provoking reviews on a wide variety of topics. There is a strong crystallographic flavour, with articles on *Crystallographic Shear and Non-Stoicheiometry* (J. S. Anderson and R. J. D. Tilley), *Stress-Induced Martensitic Transformations and Twinning in Organic Molecular Crystals* (M. J. Bevis and P. S. Allan), and *The Geometry of Disinclinations in Crystals* (W. F. Harris). A timely account of *Appearance Potential Spectroscopy* (A. M. Bradshaw), a short review of *Some Aspects of the Nature and Reactivity of Adsorbed States of Unsaturated Hydrocarbons on Metal Catalysts* (G. Webb) and a fairly specialized description of preliminary applications of *Floating Spherical Gaussian Orbitals in the Solid State* (R. A. Suthers, J. W. Linnett and W. D. Erickson) complete the volume. The Chemical Society tradition of keeping mathematics down to a minimum and giving qualitative insight on the state of the art is amply maintained. Few workers could critically span the full range of research areas considered, but this is the kind of series that even in these inflationary times one might like to make part of one's personal library.

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Introduction à la cristallographie et à la chimie structurale. Von M. VAN MEERSSCHE und J. FENEAU-DUPONT. Pp. iv. + 752, Fig. 452. Brüssel: Vander, 1973. Price 124,90FF, 860FB.

Das Buch behandelt folgende Gebiete: 1. Symmetrie (Punktgruppen, ein-, zwei- und dreidimensionale Raumgruppen), 2. Strukturelle Kristallographie, nämlich 2.1. Chemische Bindungen, 2.2. Strukturtypen (Metalle, Jonen-, Atom-, molekulare, intermediäre Strukturen, Silikate, Klassifikation, Poly- und Isomorphie), 3. Morphologische Kristallographie (Gesetze der Winkelkonstanz, der rationalen Indizes, 32 Kristallklassen, kubische Formen; Zwillinge) und 4. Kristallstrukturbestimmungsmethoden, 4.1. Beugung von Röntgenstrahlen, 4.2. Experimentelle Methoden, 4.3. Fourier- und Pattersonsynthesen, Methode des schweren Atomes, des isomorphen Ersatzes, der Fouriertransformierten und direkte Methoden; Verfeinerungen; 4.4. Andere Anwendungen, wie chemische Analytik, Orientierungen, Kristallite, Fehlstellen, amorphe Körper, 4.5. Neutronen- und 4.6. Elektronenbeugung. Anhang: Vektorrechnung, stereographische und gnomonische Projektion.

Die Anordnung von Kap. 3 nach Kap. 2 und nicht direkt an Kap. 1 anschliessend ist etwas ungewohnt und erscheint nicht vollkommen logisch. Auf S. 88 werden bei Besprechung der Antisymmetrie die Arbeiten von Heesch, welche schon 1930 in der *Zeitschrift für Kristallographie* erschienen sind, nicht erwähnt, sondern als Originalarbeiten nur diejenigen von Schubnikow (1951) und Below (1955) angegeben; auch die Ableitung der zweifarbigen Raumgruppen (Heesch–Schubnikow-Gruppen) durch Zamorzajew (1953) ist nicht zitiert.

Die Darstellung ist überaus klar und flüssig gehalten und gibt eine gute Einführung für Studenten der Chemie, der Geowissenschaften und der Physik. Der Stoffumfang entspricht etwa demjenigen, der an vielen Hochschulen in den Grundvorlesungen über Kristallographie (inklusive Praktika über Morphologie und Röntgenmethoden) behandelt und verlangt wird. Druck und Ausstattung des Buches sind sehr gut; der Preis ist wohl für einen Studenten ziemlich hoch. Beachtenswert ist das Freilassen vieler rechten Seiten, sodass dort Notizen des Lesers Platz finden können. Das Buch kann für obigen Leserkreis durchaus empfohlen werden.

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Landolt–Börnstein. Numerical data and functional relationships in science and technology. Group III. Crystal and solid state physics. Vol. 7. Crystal structure data of inorganic compounds. Edited by K. - H. HELLWEGE and A. M. HELLWEGE. Part *a*: by W. PIES and A. WEISS. Pp. xxxii + 647. Berlin: Springer, 1973. Price (cloth) DM 436, U.S. $178.80. Part *g*: by W. PIES and A. WEISS. Pp. vi + 457. Berlin: Springer, 1974. Price (cloth) DM 220, U.S. $90.20.

The Landolt–Börnstein New Series Group III Volumes 5*a* and 5*b*, giving crystal data on organic crystals, and volume 6 giving data on elements and intermetallic phases have already been published [for reviews see *Acta Cryst.* (1972). B**28**, 1317–1318; *J. Appl. Cryst.* (1972). **5**, 384]. Volume 7 Parts *a* to *h* are to give data on inorganic crystals (some 18000 compounds). Fig. 1, taken from the inside cover of Volume 7, shows the arrangement of compounds by key elements in Parts *a* to *f*. Thus Part *a*, under review here, gives data on halides. Part *g*, also under review, lists the literature references for Parts *a* to *f* and Part *h* will be a comprehensive index for Volume 7.

The tables of crystal data give the formula of the compound, the space group and lattice paramterers, Z (the number of formula units in the unit cell), D_m and D_x (in parentheses), the crystal structure type, whether the atomic positions were determined, how the crystal data were obtained and other incidental information such as colour of crystals, optical properties, melting point, magnetic properties *etc.*, together with the literature reference(s). The compounds are numbered successively together with the volume letter. The data values given in the table are the

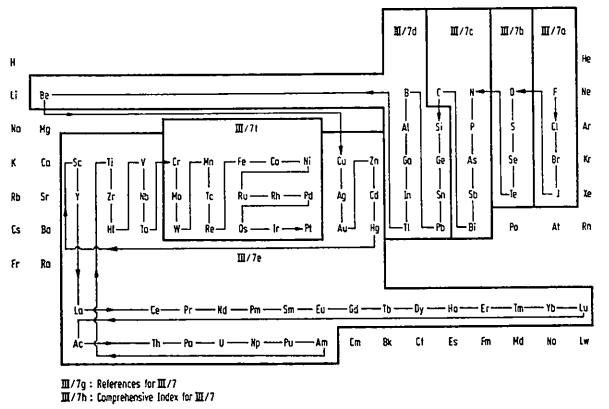

Fig. 1. Arrangement of the key elements within the subvolumes III/7*a*···III/7*f*.

best available as selected by the authors; other values that may be considered reliable are frequently given in footnotes to the table. The scheme of ordering of the halide compounds in the table of crystal data is indicated in the *Table of Contents*, at the front of the volume.

The literature references given in the final column of the crystal data table are indicated by the last two digits of the year of the reference and the first two (occasionally three) letters of the name of the first author of the paper followed by a number 1,2,3... indicating the order of printing of references if there are more than one with the same year and letters. Thus, for example, 67 Ba 35 indicates a 1967 reference with the first author's name starting with the letters Ba. 35 indicates that the required reference is the thirty-fifth listed under the heading of 67 Ba in Part *g*. In Part *g*, references are listed successively by year, and within each year alphabetically according to the two (or three) letters indicating the name of the first author of the paper. References extend through 1971; only six are given for 1972. The bibliography contains something like 27000 references. The final column of the crystal-data tables of Part *a* also gives *Strukturbericht – Structure Reports* references where appropriate. These are indicated by the volume number (bold face) and page number; thus, **21**, 360 indicates *Structure Reports*, Vol. 21, p. 360.

The sources of crystal data were as follows: generally up to 1961 *Strukturbericht* and *Structure Reports*, from 1962 to 1971 *Chemical Abstracts*, were the primary sources of literature, with the original papers being consulted wherever possible. In addition some 60 of the more important journals were searched over the period 1962 to 1971. Part *a* contains data on 3820 substances. I made three spot checks on the accuracy of the data reproduction, the first two revealed no errors, but in the third case the reference was given incorrectly.

Although the commentary in the table of crystal data is in German, the *Preface*, *Tables of Contents*, *Introduction* and *List of Symbols and Abbreviations* are printed in English as well as German. The books are printed on good-quality paper and are generally presented with the same elegance as earlier volumes in the New Series. Notwithstanding this elegance, I am bound to observe that *Crystal Data, Determinative Tables*. 3rd ed. *Inorganic Compounds*, by J. D. H. DONNAY and H. M. ONDIK, which gives essentially the same data *in a single volume*, is much handier and cheaper than the eight parts of Volume 7 in this series. In many ways the duplication of labour in producing the *Crystal Data* and the *Landolt–Börnstein* series, both in collecting and checking the data and in converting it into printed books, is frightening. It seems that it is an effort that we can scarcely continue to afford in the future either scientifically or financially.

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Landolt–Börnstein. Numerical data and functional relationships in science and technology. Group III. Crystal and solid state physics. Vol. 8. Epitaxy data of inorganic and organic crystals.

By M. GEBHARDT and A. NEUHAUS. Pp. vii+186. Berlin: Springer, 1972. Price: (cloth) DM 118, U.S. $45.50.

Volume 8 presents epitaxic data on inorganic and organic crystals and as such it extends the information provided in the crystal-data Volumes 5 to 7. It lists the planes, directions and periods and the misfits of orientation for some 3700 epitaxic systems. The data were selected critically and cover the literature from 1836 to 1970.

The data tables list the substrate crystal formula (and name) and often the space group or structure type, the deposited substance, the planes, directions and the period (in Å) for both substrate and deposit, the percentage misfit of the periods based on the substrate, and the references for the data. The reference is indicated by the last two digits for the year and the first three letters of the name of the first author of the paper, followed by a number if there is more than one reference so described by year and three letters. The references are listed by year and then alphabetically by letters in a table at the end of the volume.

The arrangement of data in the epitaxic data table is indicated in the *Table of Contents* at the front of the volume. The main groupings of data are in four tables as follows: *Inorganic Deposits on Inorganic Substrates* (94 pp), *Organic Deposits on Inorganic Substrates* (25 pp), *Inorganic Deposits on Organic Substrates* (2 pp), *Organic Deposits on Organic Substrates* (17 pp). Each table has a number (from 2 to 5) and each epitaxic datum in the table is given a number successively, starting from 1 in each of the four tables. In the three indexes to the data at the end of the volume the substance is listed and in two columns (Substrate and Deposit) the table number (2 to 5 in bold face) and entry number are given according to whether the substrate occurs as substrate or deposit in the reference. In the *Formula Index*, inorganic substances are arranged alphabetically according to the cations. Organic compounds are listed under C and H followed by other symbols alphabetically. The other two indexes are by the names of organic compounds, and by the names of minerals.

The volume is elegantly produced and printed on good paper. The *Preface*, *Table of Contents*, *Introduction* and table headings are printed both in German and in English.

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