

Notes and News

Announcements and other items of crystallographic interest will be published under this heading at the discretion of the Editorial Board. The notes (in duplicate) should be sent to the Executive Secretary of the International Union of Crystallography (J. N. King, International Union of Crystallography, 13 White Friars, Chester CH1 1NZ, England).

Dr Walter C. Hamilton 1931–1973

Dr Walter C. Hamilton, a Co-editor of *Acta Crystallographica* since 1969, died on Tuesday 23 January 1973. A full obituary notice will be published later.

New Volume of *Structure Reports*

Volume 29 of *Structure Reports*, covering the literature for 1964, was published in December 1972, at a price of 180 Netherlands Guilders. Orders may be placed with A. Oosthoek's Uitgeversmij N. V., Domstraat 5–13, Utrecht, The Netherlands, with Polycrystal Book Service, P. O. Box 11567, Pittsburgh, Pennsylvania 15238, U.S.A. or with any bookseller.

Prices of earlier volumes were given in *Acta Cryst.* (1972), A28, 299–300 and B28, 1317 and in *J. Appl. Cryst.* (1972), 5, 145–146.

Molecular Structures and Dimensions

Interatomic Distances 1960–65, Organic and Organometallic Crystal Structures will be published for the International Union of Crystallography and the Crystallographic Data Centre, Cambridge by Oosthoek Publishing Company in March 1973 at a price of Netherlands guilders 175 (equivalent to U.S. \$57.00 or £23.70 at present rates of exchange). Copies for the personal use of scientists may be obtained at a reduced price of Netherlands guilders 125 (U.S. \$40.50 or £16.90).

This book, Volume A1 in the *Molecular Structures and Dimensions* series, is a continuation of *Tables of Interatomic Distances and Configuration in Molecules and Ions* which

covered the literature up to the end of 1959. It has been prepared by the Crystallographic Data Centre, Cambridge and contains numerical data, including bond lengths, bond angles and torsion angles, for about 1,300 structures analysed by X-ray and neutron diffraction. The entries are illustrated by specially prepared stereoscopic diagrams and chemical formulae. All bond lengths were checked by computer and errors detected were traced and corrected as far as possible. Torsion angles of greatest conformational interest were selected and these were calculated from published coordinates. Only rarely have they been listed in the original publication. There are extensive summary tables of bond lengths, arranged by element-pairs, and a variety of indexes.

Volume 4 in the Molecular Structure and Dimensions series, *Bibliography 1971–1972, Organic and Organometallic Crystal Structures*, will also be published in March 1973. It contains classified bibliographic information for structures publishing during 1971–1972. Entries are arranged in 86 chemical classes and cover organic compounds, complexes, organometals and organometalloids. The price of Volume 4 is Netherlands guilders 55 (U.S. \$18.00 or £7.50). Copies for the personal use of scientists may be obtained at a reduced price of Netherlands guilders 39 (U.S. \$12.50 or £5.30). The prices of all volumes in the series are fixed in Netherlands guilders. The U.S. \$ and sterling equivalents given in this notice are subject to exchange rate fluctuations.

Both of these volumes may be ordered from Oosthoek Publishing Company, Domstraat 5–13, Utrecht, The Netherlands. Alternatively orders may be placed with Polycrystal Book Service, P.O. Box 11567, Pittsburgh, Pennsylvania 15238, U.S.A., with the Crystallographic Data Centre, Lensfield Road, Cambridge CB2 1EW, England or with any bookseller.

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.

The crystalline state. Von PETER GAY. S.ix + 348 Edinburgh: Oliver & Boyd, 1972. Preis £5.

Die Konzeption des Buches besteht darin, eine moderne Einführung in den Kristallzustand zu bieten, die für Studenten verschiedenster Fachrichtungen zugänglich ist. Dieser Konzeption entsprechend ist der Text des Buches und sind die mathematischen Ausführungen abgefasst.

Das Buch umfasst elf Kapitel mit vier Anhängen. Es gliedert sich im wesentlichen in drei Hauptthemen, in geometrische Kristallographie, Wechselwirkung von Rönt-

genstrahlung mit kristalliner Substanz und physikalische Eigenschaften im Kristallzustand.

Die geometrische Kristallographie umfasst die Kapitel 2 bis 7. In diesen Kapiteln wird eine besonders für den Anfänger verständliche, übersichtliche und einprägsame Darstellung der Geometrie und Symmetrie der zwei- und dreidimensionalen Gitter und des Zusammenhanges zwischen Gitter und Struktur gegeben. Sehr ausführlich wird die stereographische Projektion behandelt. Ausgezeichnet ist die Darstellung des Zusammenhanges zwischen Kristallsystemen und Kristallklassen jeweils auf einer Textseite

für jedes Kristallsystem. Ähnliches gilt für die Darstellung der dreidimensionalen Gittertypen und die Ableitung der 230 Raumgruppen.

Das Thema Wechselwirkung von Röntgenstrahlung mit kristalliner Materie umfasst die Kapitel 8 bis 10. Die wesentlichen Grundlagen der Röntgenbeugung werden kurz dargestellt. Nachweismethoden und Anwendungen werden genannt. Die Pulvermethoden werden in gedrängter Darstellung behandelt. Kurz wird die Textur gestreift. Bedenken hat der Rezensent gegen den Entschluss des Verfassers, das reziproke Gitter nicht zu behandeln. Wir glauben, jede moderne Einführung in die Röntgenbeugung und Kristallographie, die für Hochschulabsolventen gedacht ist, sollte eine Darstellung der Konzeption des reziproken Gitters enthalten.

Wertvoll sind die letzten beiden Kapitel *Symmetry relationships in physical properties* und *Imperfections in real crystals*. Sie geben einen Überblick über die Nützlichkeit und die Anwendung der Kenntnisse kristallographischer Grundlagen auf praktische Probleme.

Allen Kapiteln sind geschickt ausgewählte Übungen sowie weiterführende Literaturhinweise angefügt. Am Ende des Buches sind die Lösungen zu den Aufgaben zu finden. Das Buch liest sich leicht, teils interessant. Die einleitend genannte Konzeption des Verfassers erscheint – bis auf das Weglassen des reziproken Gitters – im wesentlichen erfüllt.

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Point defects in solids. Vol.1. General & ionic crystals.

Edited by J. H. CRAWFORD JR and L. M. SLIFKIN.
Pp.xv + 556, Figs. 169, Tables 77. New York: Plenum Press, 1972. Price \$43.00.

The first of three volumes from Plenum Press on *Point defects in solids* concentrates on the general thermodynamics of point defects, on ion-transport phenomena, colour centres and electron transport in ionic crystals. Each of the eight chapters is written by a different author or pair of authors; there is some inconsistency in the levels of the individual articles which vary from gentle introductions to intensive reviews supported by vast bibliographies including some 1972 references. Much of the material has been recently reviewed elsewhere, but some of the contributions give particularly clear accounts of their respective fields. *The statistical mechanics of point defects in crystals* by A. D. Franklin, *Colour centres in simple oxides* by A. E. Hughes and B. Henderson, and *Conduction by polarons in ionic crystals* by F. C. Brown are especially to be recommended. Defects in semiconductors and metals will come under scrutiny in the remaining volumes.

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Quantum electronics in lasers and masers. Vol. 52, Part 2. Edited by D. V. SKOBEL'TSYN. Pp.v + 306, Figs. 109, Tables 36. New York: Plenum Press, 1972. Price \$43.00.

This forms number 52 in the Lebedev Physics Institute Series, the translated version appearing in 1972. We have learned to expect from this series comprehensive and authoritative accounts of a wide range of topics in physics and this volume continues to uphold the impressive standards set by earlier volumes. The unfortunate aspect, for a subject which is developing as rapidly as that dealt with, is the long delay between the preparation of the articles and the appearance of the English translation. Thus the latest references quoted in the four articles are for 1967; in many areas of the subjects described, the past five years have seen highly significant developments.

The injection laser has often had the image of being less exciting than the more spectacular gas and doped-crystal devices – a kind of poor relation. It is true that at an early stage in its development problems arose which made for difficulties in obtaining 'tidy' operation of the device. Behaviour was often erratic and unstable and the difficulties of exercising sufficient control over the fabrication led to variations in behaviour which were difficult to understand.

Eliseev's paper deals extremely thoroughly with injection lasers of compounds of the A^3B^5 types and gives an excellent summary of the extent to which these systems can now be understood. In general, the main features of these devices can be understood in terms of the predictions of the band theory of heavily-doped semiconductors. Incomplete understanding of the statistics appropriate to band-filling and of the transition probabilities involved prevents a detailed picture from emerging and the lack of reproducibility from specimen to specimen continues to create problems. Nevertheless, sufficient progress has been made to enable the major factors governing the operation of injection lasers of this type to be identified.

The sport of blasting holes in solids by the use of focused laser pulses has been enthusiastically followed for the last decade or so. This was one of the major technological contributions of the laser which have frequently been described but have not in fact developed to any significant extent. The complexity of the processes recurring, often under conditions for which little information existed, led to problems of interpreting the observations made. Afanas'ev and Krokhin describe their gas-dynamical approach to the problem of predicting the correct analytical dependence of the parameters of the vaporized substance on the radiation flux density, time and material characteristics. The results, as the translator puts it, 'enable one to explicate the principal physical attributes of the process'.

Of closely related interest is the hope that by the use of sufficiently intense laser pulses, temperatures sufficiently high for thermonuclear reactions to occur could be produced. Basov's group were among the earliest to form the 'neutron club', formed of those who have observed emitted neutrons from focused high-energy laser pulses. The paper by Basov, Krokhin and Slizkov gives an excellent summary of the experimental work up to 1967 on the study of laser-produced plasmas. At that time, the maximum temperatures observed were around 60 eV – too low to be of interest for the thermonuclear problem.

Among the earliest observations on the ruby laser, the now-familiar 'spiking' phenomenon was apparent. At a