

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 General Secretary of the International Union of Crystallography (G. Boom, Laboratorium voor Fysische Metaalkunde der Rijksuniversiteit, Universiteitscomplex Paddepoel, Groningen 8002, The Netherlands). Publication of an item in a particular issue cannot be guaranteed unless the draft is received 8 weeks before the date of publication.

New Co-editors of *Acta Crystallographica*

The Executive Committee of the International Union of Crystallography has approved of the appointment of two new Co-editors of *Acta Crystallographica*: W. C. Hamilton (U.S.A.) and P. J. Wheatley (U.K.). Their addresses are printed on the inner front cover, along with those of the other Co-editors. Dr Wheatley will be active as Co-editor immediately, while Dr Hamilton will take up the actual work on 1 September 1969 as he is now engaged in the preparations for the Eighth Congress of Crystallography which takes place in August this year.

Safe Use of X-ray Equipment

The following notice has been received from the Commission on Crystallographic Apparatus:

With X-ray equipment, there is continual need to remind oneself of the potential dangers from radiation as well as those associated with high voltage. Use of equipment of this type involves a responsibility for the safety and health of one's colleagues and any other person who approaches the apparatus as well as for one's own protection. The dangers of radiation dosage are accentuated by the increasing power output of present-day X-ray generators.

The International Commission on Radiological Protection (I.C.R.P.) has had under consideration the revision of existing (1960) I.C.R.P. recommendations on the safe use of X-ray installations. A preliminary report of the available information has been published in *Health Physics* (1968) **15**, 481–486 by Professor B. Lindell. To assist in gathering further material and examples to assess the magnitude of the problem and the methods of lessening hazards, the International Commission on Radiological Protection would welcome comments and suggestions from crystallographers from their personal knowledge and practical experience. These should be sent to the I.C.R.P. Secretary, Dr. F. D. Sowby, I.C.R.P., Clifton Avenue, Sutton, Surrey, England.

This request provides an opportunity to remind X-ray users of the associated potentially serious hazards from the increasing generator power and the proliferation of automatic equipment. There is great need to ensure the incorporation of fail-safe protection devices. It is advisable that crystallographers re-read on occasions the available documents dealing with safety aspects of the use of X-rays and, in particular, ensure that colleagues just beginning to use equipment should acquaint themselves with the necessary information. This is available not only in the article by Lindell referred to above but also in the earlier Report of the I.U.Cr. Commission on Crystallographic Apparatus [*Acta Cryst.* (1963) **16**, 324], while a later compilation by R. Rudman in *J. Chem. Ed.* (1967) **44**, A7 may be found useful.

World Directory of Crystallographers

Fourth Edition

The International Union of Crystallography will publish a Fourth Edition of the *World Directory of Crystallographers*. A world-wide team of (national) Sub-editors has been assembled. Every Sub-editor will prepare the list for his country. The lists will again contain biographical entries in alphabetical order within each country, giving names and addresses of crystallographers as well as their major scientific interests. An additional alphabetical listing containing the total of all names entered, with references to the appropriate national lists, will be included.

The Sub-editors will be sending out questionnaires to all persons who were listed in the Third Edition (1965). Crystallographers who are not listed there but would like to be included should write to the Secretary of the National Committee of their country; the appropriate addresses can be found in *Acta Crystallographica* (1968), **A24**, page 706. Crystallographers in countries not adhering to the Union should write to

Dr G. Boom, General Secretary I.U.Cr.
Laboratorium voor Fysische Metaalkunde der
Rijksuniversiteit,
Universiteitscomplex Paddepoel, Groningen 8002,
The Netherlands.

International Union of Crystallography

Structure Reports

Volume 26 of Structure Reports, covering the literature for 1961, was published in February. Volume 24, covering the literature for 1960, was published in November 1968. The price for each of these volumes when ordered from countries outside the Netherlands is (Netherlands guilders) f 140 (or at present rates of exchange \$39 or £16.8s). Note, however, that prices of all volumes of *Structure Reports* to customers in the Netherlands are increased by f5 because of the recently introduced turnover tax.

Volume 25 is the cumulative index for the ten years 1951–60. It is expected to be published about May 1969 (price outside the Netherlands f90).

Full details of various price reductions for standing orders and of reduced personal prices for Structure Reports were given in *Acta Cryst.* (1968), **A24**, 703 and **B24**, 1398, and in *J. Appl. Cryst.* (1968), **1**, 196.

Certain concessions offered to purchasers of ten-year sets applied originally only to orders placed before 1 April 1969. These concessions are now extended until further notice.

Orders

Structure Reports is published for the International Union of Crystallography by A. Oosthoek's Uitgevers Maatschappij N.V., Domstraat 11-13, Utrecht, The Netherlands. Orders can be placed with Oosthoek's or with any bookseller. All prices are post free from Oosthoek's.

Payments to Oosthoek's in U.S. dollars or pounds sterling may be made by cheque, which will be paid in to Oosthoek's account at the Chase Manhattan Bank, New

York 15, N.Y., or the British Linen Bank, London, E.C.2., respectively. No problems of U.S. or U.K. currency control arise with such transactions.

Orders from the North American area can also be placed with Polycrystal Book Service, P.O. Box 11567, Pittsburgh, Pa. 15238, U.S.A.

An informative prospectus for *Structure Reports*, showing specimen pages and giving price details for all volumes, can be obtained free of charge from Oosthoek's.

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, England). As far as practicable books will be reviewed in a country different from that of publication.

Hydrogen bonding in solids. By WALTER C. HAMILTON and JAMES A. IBERS. Pp. xv + 284. New York: Benjamin, 1968. Price \$ 13.95.

Every year it becomes more difficult to write a good scientific book. The crazy tempo of the accumulation of experimental data, the continuous birth of new investigational methods, the rapid change in theoretical points of view and – perhaps the main thing – the unavoidable growth of several kinds of hybrid scientific topics – all this makes the problem of the successful selection of material and the scope and logical sequence of its exposition a matter of high scientific skill.

Surely there are subjects which do not require the author to make a choice between a lot of possible sections in a multidimensional space of science. This is so in the case of books about crystal symmetry, or the dynamics of material points, but such is not the case for a book dealing with hydrogen bonds.

Why hydrogen bonding in solids? Are the bonds in solids different in principle from bonds in the melt or in solution? Surely not. But the authors ingeniously give their book a secondary title – ‘Methods of Molecular Structure Determination’. It is written with small letters but this is a mere formality since it is not customary to give a book such a long title. If we want to understand the principle of construction of the book, however, we must read the two titles together.

Our previous question – why in solids – was quite legitimate if one bears in mind the *nature* of bonding, but we agree with the authors that the methods of investigation of hydrogen bonding in solids are multifarious and there is some specificity which deserves attention and knowledge.

The second title is surely very important because the methods topic plays the first fiddle in the book. The title reflecting most truly the book content is the following: ‘The methods of determining the structure of solids which are appropriate to the investigation of hydrogen bonds and exposition of some results of these investigations’.

My opinion that the authors are more interested in methods than in results is based on the fact that there are very few pages in the book dedicated to the crystallography of hydrogen bonding. The results are given as an aggregate of abstracts. We find practically no attempt to give any classifications of bonds, based on their very interesting geometry. (The brief and naive discussion on pages 18–21 does not count.) Physical, not chemical, classification of the crystallographic data is badly needed, but unfortunately is lacking in the book. The anisotropy of physical properties

caused by hydrogen bonding is also outside the scope of the book. All things which are done with love and with enjoyment are done well; therefore I find the first 160 pages of the book much more interesting than the last 100 pages, where the description of hydrogen bonds in organic substances is given.

I think that the first chapters, *i.e.* Chap. 2, ‘Diffraction Methods’; Chap. 3, ‘Spectroscopic and Diffraction Studies’; Chap. 4, ‘Rotation Motion in Solids and Neutron Spectroscopy’, make the Hamilton–Ibers book a very valuable contribution to the literature of physical methods of investigation of the structure of matter. These chapters are written with a perfect and deep understanding of a very important thing – the interrelation of different methods. The whale cannot be caught with a fishing rod and nobody goes trout fishing with a harpoon. We have very few books, if any, discussing the possibilities of different structure methods in the same book and with the same high competence.

Therefore the book is interesting not only to the scientist interested in hydrogen bonding but extremely useful to every member of the crystallographic family.

In Chapter 2 all concepts of diffraction methods are vividly and concisely described: the Bragg equation, the reciprocal lattice, the structure amplitude, the scattering density and the principles of structure determination. The next step is to discuss the scattering amplitudes in all three usable diffraction methods – X-ray, neutron and electron. After that the peculiarities of each diffraction method branch are treated briefly but all important things are stated clearly.

In this short exposition very valuable remarks are spread here and there about the physical meaningfulness of different techniques so often used somewhat blindly in different structure investigations.

Systematic errors in structure determinations are fully discussed in a special section. Perhaps a half page is lacking to warn the reader of unexpected trouble with which he can be faced if the crystal contains a comparatively small per cent of impurities. I cannot help repeating my opinion that the inner consistency of the structural result is sometimes more important than the *R* index. The ‘clever’ structure with *R* equalling say 0.11 is better than a ‘silly’ structure with *R*=0.10. The importance of introducing structural reasoning as an element of structure determination is, from my point of view, not claimed with sufficient firmness.

Chapter 3 introduces us to optical vibration spectroscopy. Perhaps it would be worth giving a little more place to the Urey–Bradley field. Spectroscopic manifestations of hydro-