Further details of the Congress, including arrangements for registration, accommodation, scientific visits, *etc.*, will be published in the *First Circular*, which will be distributed in the second half of 1977. Persons interested in receiving the *First Circular* are requested to complete an application card and return it to the Organizing Committee before 1 June 1977. Application cards may be obtained from the Secretaries of the National Committees for Crystallography or from the Organizing Committee. Please bring this announcement to the notice of your colleagues.

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).

European Crystallographic Committee

The European crystallographers, through the European Crystallographic Committee, invite colleagues in developing countries to join in co-operation schemes. The purpose of the co-operation is to exchange information, teaching material and staff, to share facilities such as data, collecting apparatus, to assist potential buyers of equipment to contact the main suppliers and to set up joint research programmes.

Active crystallographers and/or departments with crystallography groups, who are interested in such a co-operation scheme are invited to contact either Professor Dr D. Feil, Chemical Physics Laboratory, Twente University of Technology, PO Box 217, Enschede, The Netherlands, or the President of the European Crystallographic Committee: Dr O. Kennard, University Chemical Laboratory, Lensfield Road, Cambridge CB2 1EW, England.

Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS2 9JT, England). As far as practicable books will be reviewed in a country different from that of publication.

Molecular structure – the physical approach. By J. C. D. BRAND and J. S. SPEAKMAN. 2nd edition revised by J. C. SPEAKMAN and J. K. TYLER. Pp. vi + 367, Figs. 120, Tables 69. London: Arnold, 1975. Price £11·00, paper £5·50.

I accepted the task of reviewing this bright small book with great pleasure because of the debt I have to its first edition. The first edition has been of great help to me (as a textbook) in teaching the methods of determination of molecular structure in the physical chemistry courses at my University. In my teaching experience this book has certainly been successful in its purposes – giving, in a general and sufficiently concise way (but not for this less rigorous), the theoretical fundamentals of the methods for molecular structure determination.

This second edition has maintained the same philosophy as the first. On the one hand it gives a sufficiently sound explanation of the physical principles on which the experimental methods are based; on the other, it helps the researcher who uses these methods to realize not only why they are employed but also that they offer many more possibilities than those with which he is accustomed to be content. The book certainly achieves its aim and is particularly instructive for students who need a first general account of the subject before going more deeply into it, possibly in successive specialist courses.

After an introductory chapter on the concept of the molecule and on the range of physical methods available for studying molecular structures, the concept of symmetry is tackled from both the spectroscopic (isolated molecules) and crystallographic (molecules packed in crystals) points of view. Group theory is employed in a simple and elegant way; of course, only point groups are dealt with by group theory as the treatment of space groups would be too cumbersome and outside the aims of this book.

That part more strictly devoted to molecular spectroscopy takes up the following seven chapters and represents about 60% of the whole work. After a chapter on the fundamentals of quantum mechanics and another giving an introductory survey of spectroscopic methods, pure rotation, vibration, Raman and nuclear resonance spectra are considered successively. Well chosen examples are used to clarify the concepts and their importance in the various applications.

Only two chapters are devoted to diffraction methods, one

to crystal structure analysis, the other to electron diffraction by gases and vapours. The treatment here is particularly concise: the whole of crystal structure analysis, including the problems of the accurate determination of electron density and the assignment of absolute configuration, is condensed into 43 pages. Nevertheless, this section is entirely clear and is successful in explaining to the non-crystallographer the nature of the method and the meaning of the results.

Methods giving indirect information on aspects of molecular structure, such as those based on dielectric and optical properties (dielectric constant, dipole moments, molar refractivities, Kerr effect), are treated in the penultimate chapter and the final chapter is devoted to a discussion of the meaning of the various structural parameters and to a comparison and assessment of the different methods for obtaining them.

Perhaps not everyone would agree with some of the authors' concluding comments, such as, 'The spectroscopic approach is more radical' than diffraction methods. It would be better to say that these approaches are quite different both in their philosophy and in their results: Diffraction allows us to 'see' molecules with no direct indication of their energy states, while spectroscopy, by dealing with energy transitions, gives direct information as to their energy states. Therefore there is really no problem of superiority between the two methods: they are merely complementary. Also, the sentence 'Nevertheless the spectroscopic method operates in a setting that seems to be closer to whatever reality may underlie our concept of the molecule' is objectionable because the concept of an energy level has no *a priori* reality greater than that of a molecule. Indeed, both concepts can be regarded equally as abstractions which the human mind uses to describe what the senses receive in the experiments.

The book closes with three appendices giving character tables for some important point groups, some mathematical demonstrations and a series of problems useful for the student who wishes to verify in practice what he has learned in the theoretical study.

The book is well and rigorously written and, even if it is often rather concise, it is always clear and convincing. It is not only a very good text book for introducing students to these important fields of modern physical chemistry but it can also be useful to anyone who wants to have a sound general knowledge of the fundamentals of the most important structural methods.

M. NARDELLI

Istituto di Chimica Generale ed Inorganica
Università degli Studi di Parma
Via M. D'Azeglio 85
43100 *Parma*
Italy

Molecular structure by diffraction methods. Vol. 3. By G. A. SIM and L. E. SUTTON (Senior Reporters). Pp. xiv + 514, Figs. 89, Tables 47. The Chemical Society, 1975. Price £26·00 (US $71.50).

Molecular Structures by Diffraction Methods is an annual series containing comprehensive reports on the determination of molecular structures by diffraction methods, and is part of the series *Specialist Periodical Reports* issued by The Chemical Society. In Vol. 3, papers concerning X-ray diffraction studies published in the period April 1973 – March 1974 are reviewed. In the neutron diffraction section papers appearing up to September 1974 are included.

The X-ray and neutron diffraction sections are restricted essentially to structural results for molecules and finite ions. No reviews of theoretical aspects, such as direct phase determination, are given. The reports are systematic and contain a large amount of information. In many cases structural relationships between different compounds are indicated. The reports are very valuable for the specialist chemist who has not been able to keep up with the literature in his field. Moreover, scanning through the reports gives new ideas about structural principles and can stimulate interest in new fields. The large number of structural formulae given in the book are very helpful.

In the electron diffraction section papers up to the end of August 1974 are reviewed. The section makes clear, even to a chemist who is not a specialist in this field, which types of structural studies of gaseous molecules are of interest nowadays. The review of apparatus development is restricted to America, Canada and Japan. It is planned to give the developments in Europe and Russia in a later report.

The chapter *Gases and Crystals: A Comparative Study* is extremely useful as it shows clearly that for a large number of molecules the structures are different in the two phases.

The book contains an author index, and there are only a few misprints. It can be recommended to all structural chemists and should be on the shelves of all libraries in chemical laboratories.

AAFJE VOS

Laboratory of Structural Chemistry
University of Groningen
Zernikelaan, Paddepoel
Groningen
The Netherlands

Anomalous scattering. Edited by S. RAMASESHAN and S. C. ABRAHAMS. Copenhagen: Munksgaard, 1975. Pp. xi + 539. Price D. Kr. 200.00.

A review of this book by M. M. Woolfson has been published in the November 1976 issue of *Acta Crystallographica*, Section A, page 1037.

The file will be sent to your email address. It may take up to 1-5 minutes before you receive it. The file will be sent to your Kindle account.Â You can write a book review and share your experiences. Other readers will always be interested in your opinion of the books you've read. Whether you've loved the book or not, if you give your honest and detailed thoughts then people will find new books that are right for them. 1. Trust: The social virtues and the creation of prosperity. Free Press. Francis Fukuyama. The Significant Structure Theory of Eyring and Jhon, originally developed for bulk liquids, can be applied to molecular clusters in the gas phase. The canonical ensemble treatment of small clusters...Â J. C. Brand and J. C. Speakman, Molecular Structure, The Physical Approach Edward Arnold Publishers Ltd., London, 1961, p152.Google Scholar. [15]. S. M. Blinder, Advanced Physical Chemistry The Macmillan Company, London, 1969, p456.Google Scholar. [16]. H. Popkie, H. Kistenmacher and E. Clementi, J. Chem.