

graphy has been represented at many of the international discussions and congresses concerned with information and information retrieval, beginning with the UNESCO conference on physics abstracting in 1949, and ending (so far) with the Conference on Scientific Information in the Fields of Crystallography and Solid-State Physics held in Japan in October 1961. The Union has also always been fully represented at the meetings of the ICSU Abstracting Board.

It is against this background that it is worth while to include an account of Fairthorne's book in *Acta Crystallographica*. It consists of a reprint of sixteen published papers, ranging from the classical 'The Mathematics of Classification' published in the *Proceedings of the British Society for International Bibliography* in 1947, to 'Basic Postulates and Common Syntax' from a book published in 1961. Fairthorne has been active in the field of information, classification, and retrieval from the beginnings of the post-war explosion of this subject, and his collected papers make a reasonably coherent survey of the basic theory, though there is hardly a word in the book dealing with the practice. One's way through the book is eased by a preface by the author himself and 'comments' by L. M. Bohnert and C. N. Mooers. A very wide range of mathematical techniques is involved, ranging from Boole to Brouwer, and from lattice algebra to generating functions. The first paper, in fact, makes a certain pretence of celebrating the centenary of the publication in 1847 of Boole's essay on the calculus of deductive reasoning. The book thus makes heavy demands on its readers, and there can be few people outside the narrow field of information retrieval who will be able to read it without doing a good deal of homework on the principles invoked.

There are just over ten pages of index, compiled by C. N. Mooers. The index is detailed and in places amusing. It is a relief to find that 'Abel' refers to Genesis, and not to group theory.

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Structural Inorganic Chemistry. By A. F. WELLS.

Pp. xxiii+1055, with 363 figs. 3rd ed. Oxford: Clarendon Press. 1962. Price 84s.

The well-known book by Dr Wells has now appeared in a third edition, 45% more voluminous than the second edition of 1950. To quote the author, 'the great activity in this field during the past ten years, the addition of a chapter on the geometrical basis of crystal chemistry, and the fact that it is more difficult to write concisely than discursively, have together led to a considerable increase in length'.

As before, the book is divided into two parts. The first is a general presentation of the following topics: the covalent bond, interbond angles and bond lengths, ionic crystals, the geometrical basis of crystal chemistry, the crystalline state, and the experimental methods of structural chemistry. Here the chapter on the geometrical basis of crystal chemistry replaces the chapter in the earlier edition dealing with states of aggregation. In this new chapter the author puts forward his views regarding the geometrical aspects of crystallography which he has developed in a number of papers, and which are both

elegant and instructive. I consider that this chapter will be particularly useful to the chemist whose knowledge is mainly limited to finite groups of atoms in liquids and gases and who wants to learn about the infinite complexes of the solid state.

Significant changes in the other chapters of Part I include the addition of some pages dealing with the ligand field theory, a more extensive presentation of lattice defects and disorder, and, in the chapter on experimental methods, some new paragraphs on neutron diffraction and nuclear and electron magnetic resonance. One could perhaps wish for a more penetrating treatment of some of these subjects, especially of the ligand field theory, which has proved so useful in the interpretation of transition metal complexes. But it is evident that the author has tried to avoid an undue increase in the volume of Part I. Consequently there is a risk that the presentation of complicated problems may be too condensed to be of any real value.

The second part of the book is, as before, devoted to a systematic description of the structures of inorganic substances. It has grown a little more than the first part and now fills 72% of the book. As presented in the second edition, this part has been extremely useful, and I am sure that many users of that edition will now be very glad to obtain it in a more up-to-date form. There are many situations when one does not have the opportunity of consulting *Structure Reports* for a reference or for a short general description of a structure and it is on these occasions that it is most useful to have Dr Wells' book at hand. I think the same will prove to be the case with the third edition. I have not made any tests of the reliability of Part II, but one must bear in mind that such a wealth of material as is found here cannot be collected and processed without omissions and errors. To mention just one detail, one would prefer to have the layer sequences and stacking faults of the cadmium dihalides (p. 348) and carborundum (p. 769) treated as consequences of crystal growth by means of growth spirals.

In mentioning the usefulness of Part II of Dr Wells' book, I have perhaps regarded this section as a sort of a handbook. The author has stressed, however, that the expansion of the book 'does not imply that the aim has been to produce an encyclopedic work of reference'. Let us hope with the author 'that there are still students with sufficient time (and interest) to dip into a book for reasons other than to find a concise selection of the facts required for a particular examination'. I think this book has very much to give students belonging to this category.

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Chladni figures — a study in symmetry. By

MARY D. WALLER. Pp. 163, plates 47. London: Bell. 1961. Price 42s.

This posthumous work is remarkable for the new light which it sheds on an old subject. In 1932 an ice-cream vendor in the street asked the author if she could explain a phenomenon he had noticed. When a small piece of the dry-ice from the box holding his ice-creams, was

pressed against the bell on his vehicle, the bell gave out a loud ringing note. This chance question led the author to a new technique for exciting the vibrations in plates, bars, bells etc. Chladni had used a bow in his much earlier work and for certain effects the bow is better than the dry-ice. The detailed study using the new technique of excitation has led to a more fundamental understanding of the modes of vibration of solid bodies of various shapes. The numerous beautiful plates show how the patterns are related to the symmetry of the shape of the vibrating body. A classification, based on the manner in which nodal and anti-nodal axes are combined, is laid down for many shapes of plates. Measurements of the frequencies of particular modes of vibration have been recorded and the data for determining the frequency of any particular mode of vibration is given. A section on repeating vibration patterns brings the subject into relation with two-dimensional lattices and their symmetry. The decorative designs which may be derived from these are of interest to the artist. A section is also devoted to the study of the manner in which powders and dusts

of various kinds settle down at nodes or antinodes. The bibliography is most valuable.

An unusual feature of the book is the arrangement of the text and the plates. Throughout a large part of the volume the text is made just long enough to occupy a page opposite to the figures which it explains. This imposes a somewhat arbitrary limitation on the text and necessitates the section headed 'additional notes'. This volume is likely to be regarded as a classic study of Chladni figures and can be warmly recommended to all interested in these vibration patterns.

The appreciative foreward by Prof. Andrade is a welcome embellishment to the work. Finally, it should be said that the production of the text and figures is excellent.

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Books Received

The undermentioned works have been received by the Editors. Mention here does not preclude review at a later date.

Ionization X-ray Equipment for Research on Crystalline Materials at various Temperatures. By P. F. KONOVALOV, A. I. EFREMOV and B. V. VOLKONSKI. Translated from the Russian by Y. SHECHTMAN. Pp. v+102. Jerusalem: Israel Program for Scientific Translations, 1961. [Russian original: Leningrad, 1958.]

Krystalografia Chemiczna I Fizyczna. By JÓZEF CHOJNACKI. Pp. 462. Warszawa: Państwowe Wydawnictwo Naukowe, 1961. Price Zł 48.-.

Photoelectrets and the Electrophotographic Process. By V. M. FRIDKIN and I. S. ZHELUDEV. Translated from the Russian by A. TYBULEWICZ. Pp. xii+195. New York: Consultants Bureau, 1961. Price \$ 12.50.

Methods of Experimental Physics. Vol. 3. Molecular Physics. By DUDLEY WILLIAMS. Pp. xiv +760. New York: Academic Press Inc. Price £ 6.16.0.

Piezoelectric Properties of Wood. By V. A. BAZHENOV. Pp. vii+180. New York: Consultants Bureau, 1961. Price \$ 9.50. Translated from the Russian edition of 1959, with revisions. [Translator's name not given.]

Ore Microscopy. By E. N. CAMERON. Pp. xiv+293. London: Wiley, 1962. Price 79s.

Direct Analysis of Diffraction by Matter. By R. HOSEMANN and S. N. BAGCHI. Pp. xxii+734. Amsterdam: North-Holland Publishing Company, 1962. Price 72 Netherlands guilders.

X-ray Powder Data for Ore Minerals: the Peacock Atlas. By L. G. BERRY and R. M. THOMPSON. Pp. vi+281+27 plates. Geological Society of America, Memoire 85, 1962. Price \$ 8.25.

Molecular Structure and the Properties of Liquid Crystals. By G. W. GRAY. Pp. viii+314. London: Academic Press, 1962. Price 63s.

Oxide magnetic materials. By K. J. STANDLEY. Pp. viii+204. Oxford: Clarendon Press, 1962. Price 35s.

The Tides and Kindred Phenomena in the Solar System. By G. H. DARWIN. Pp. xx+378, with 43 figures. London: W. H. Freeman and Company, 1962. Price 20s.

Sir George Darwin's popular exposition of his work on tides and related phenomena was originally published in 1898. It is now republished as a paperback, with a seven-page introduction by W. H. Munk of the Institute of Geophysics and Planetary Physics of the University of California. It is an admirable popular book, with some arithmetic but no higher mathematics. Crystallographers may find the chapters on harmonic analysis of interest, but the book contains nothing to justify an extended review in *Acta Crystallographica*.