

## Book Reviews

*Works intended for notice in this column should be sent direct to the Book-Review Editor (R. O. Gould, Department of Chemistry, University of Edinburgh, West Mains Road, Edinburgh EH9 3JJ, Scotland). As far as practicable books will be reviewed in a country different from that of publication.*

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**Historical atlas of crystallography.** Edited by J. LIMA-DE-FARIA. Pp. x + 158. International Union of Crystallography and Kluwer Academic Publishers, Dordrecht, London and New York, 1990. Price Dfl 69.00 or US \$36.00 or £20.00. ISBN 0-7923-0649-X.

This is an unusual book, beautifully produced and packed with interest and information. It is an excellent resource book for the teaching of the history of crystallography.

It is the character of the book which is unusual. Its focal point is a set of novel displays of all the major crystallographic landmarks, plotted as a linear function of time: 'time-maps'. Hence the word 'atlas' in the title. The first of these displays, spread over a double page, maps the development of crystallography all-inclusively, from AD 1500 to the present date, with superposed blue, violet, green and red colourings to show up the distinction between geometrical, physical, chemical and structural crystallography. This main time map is followed by subsidiary maps, plotting (against time) geometric, physical, chemical and structure-determination crystallography in turn, in greater detail. A few relevant landmarks in related areas of physics have been included. The unique characteristic of this form of display is the ease with which features of historical development can be grasped at sight – since the eye is such a superlatively rapid processing instrument. Thus, one can see at a glance that Leeuwenhoek was a contemporary of Huyghens; that the polarizing microscope appeared some 150 years after the wave theory of light; that Haüy preceded Dalton by a couple of decades; and so on. Of course, the disadvantage of showing historical developments in the form of linear charts is that there is insufficient space for all the items that should really be included and even those that are included are specified telegraphically. This difficulty is made up for in the accompanying text, where a very great deal of historical detail is presented in very readable form.

The idea for this novel type of display of historical landmarks is due to Professor José Lima-de-Faria, of Lisbon. Indeed, his was the idea for the book as a whole. It was conceived primarily as an instrument for teaching, not as a definitive work of historical scholarship, and it must be understood in that light. It was in this role, as an educational resource, that the preparation of this book was sponsored by the International Union of Crystallography and, specifically, by the Teaching Commission of the IUCr. Such sponsorship gives the book a certain status; however, the Forward (by the Chairman of that Commission) makes it clear that the book is in no sense an official version of the history of crystallography, but an account which can properly be valued for the personal views of its various authors.

Mention of the 'various authors' of this book leads at once to the main criticism that must be made of this volume. It suffers from a lack of coherence. Having conceived his idea of time maps, and having worked out both their design and their textual backup, covering the past five centuries, Lima-de-Faria felt that, to fill out the details and to bring the history up to the present day, he needed the assistance of others who could write more authoritatively on specific aspects of crystallography. He therefore recruited six specialists for this, with the result that, while the book is given a lot more weight, both in pages and in scholarship (six chapters) it is also rendered patchy by these additions. Each specialist article differs in style and emphasis, giving the book a rather fragmented profile. Five of these essays are detailed histories. They deal separately with geometrical and physical crystallography (by Marjorie Senechal and W. A. Wooster, respectively), inorganic and organic chemical crystallography (by P. B. Moore and Jenny P. Glusker, respectively) and crystal structure determination (by M. J. Buerger). These have varying degrees of overlap with Lima-de-Faria's survey, naturally, but each article is manifestly self-contained, independent of the others. Each is good material, but, as one of the objects of these essays was to take the historical treatment up to the present date as far as possible, Buerger's is the least satisfactory. The sixth invited author was Helen D. Megaw, whose contribution is a short essay attempting a definition of the scope of crystallography in the context of general physical science.

In his own contribution to this book – as its principal author and as its editor – Lima-de-Faria has been generous with bibliographic information (especially) and illustrations. Indeed, we are really indebted to him for his meticulous attention to detail. A human touch is given to his chapter on time maps by the inclusion of about 100 portraits; it is followed by a list of over 500 references and, at the end of the volume, by a bibliography of some 300 entries. Elsewhere in the book there are many more lists of references and there are illustrations of classic crystallographic diagrams, early microscopes, diffraction patterns and EM images and, in addition to these, reproductions of the title pages of nearly 100 of the most important crystallographically related publications from the 16th century through to the 19th. There are bound to be minor criticisms of the selections that have been made. For example, there can be no good reason why Kathleen Lonsdale has been omitted from the portraits; and what of C. G. Darwin, Nishikawa or Zhdanov . . . ? But it is idle to pursue this sort of thing.

It is beyond argument that this book is a mine of information. Its lack of unity in the manner of presentation is a real defect but by no means a damning one. The fact is that most of this book is absorbingly interesting to read. Crystallography is one of the most central of all the sciences. Crystals constitute a bridge between the atomic level and

the macroscopic world. The slow development, over the past five centuries, of our understanding of what crystals are and what they tell us is a paradigm of the growth of modern science. Sadly, because of the burgeoning superfluity of facts, techniques and theories, we give little attention these days to the history of the development of our modern competence in science, even in our universities. However, wherever the historical dimension is dealt with, this book should be on hand for study and for reference. This book is not one we should expect to see on the shelves

of the individual crystallographer but it is a 'must' wherever the history of science is taught, particularly the history of crystallography and it should certainly be available in every respectable library of general science.

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