developed in the last ten years. Although Section 6 contains some very useful material, the clarity of presentation of the textual material is not up to the high standard of the previous sections.

In sum, Volume IV is a fine addition to the other volumes. The earlier volumes of the pre-computer era now look rather dated. One hopes that Volume IV sets a standard that will be followed by future volumes in this series.

D. S. Moss

Birkbeck College
Malet Street
London WC1E 7HX
England

X-ray diffraction. By L. V. Azaroff, R. Kaplow, N. Kato, R. J. Weiss, A. J. C. Wilson and R. A. Young. Pp. xiii+664. Figs. 197, Tables 33. New York: McGraw-Hill, 1974. Price £15.10.

It is inevitable that any book which claims to provide an authoritative treatment of modern developments in X-ray diffraction will be compared with the classics of Compton & Allison, Zachariasen, James and von Laue. Indeed, the authors have assumed a prior *familiarity* with those classics; mere acquaintance with the subject matter, one quickly discovers, is not enough! While the subject matter is such that one might expect most serious students to obtain their own copies, it is clear that this book will not be used by experienced workers in preference to either the literature which it summarizes or the before-mentioned classics.

The format of the book is straightforward enough. It starts with *Scattering by Atoms* which includes elastic scattering theory, inelastic scattering theory (exclusively concerned with Compton scattering) and an updating of the experimental results obtained since the author's book. Chapter 2 on *Kinematical Theory* sets out the many approximations in useful detail and develops the theory, first for spherically averaged samples and then for single crystals. After about one hundred pages one is somewhat surprised to start at the beginning again in chapter 3. The fact that the notation changes at this point (as do the style, the mode of development and the aims) is mentioned as a footnote in chapter 4. Chapters 3–5 summarize, in about 260 pages, the wave optical theory of plane-wave and spherical-wave diffraction by perfect and nearly perfect crystals. These chapters are comprehensive and well written and, since all previous textbooks have concentrated on plane-wave theories, they constitute the only introduction available to students of the subject in book form. Chapter 6 on *Powder Diffractometry* is of similar quality, giving both a lucid introduction to the powder method and an up-to-date account of line-profile and intensity analysis. The final chapter, which aims to deal with single-crystal intensities, describes the purpose of and design criteria for single-crystal diffractometers. Sections on spectral and background control follow, but the sense of direction is lost about halfway through the chapter.

Although this book was published in 1974, there are very few post-1970 references in the otherwise ample bibliography. Apart from the very small amount of cross-referencing there is no obvious product of a collaborative effort in the text. Chapters 3–5 (Kato) and 6 (Wilson/Young) are very good but the reader whose work spans both interests is very rare. The remainder of the chapters leave one wondering for whom the book was published. The preface tells us that crystal structure analysis, X-ray diffraction instrumentation, X-ray topography and computational methods in X-ray diffraction are all subjects on which excellent books, monographs and review articles are already available. To take X-ray topography as an example (others will have their own areas of familiarity) I do not believe that to be true. Indeed, had Professor Kato added two chapters on X-ray topography, based on his already substantial contribution, then would we have had a new classic text.

There is a clear need for an authoritative text in the general area outlined by this book and by its companion volume. This is not it.

Michael Hart

H. H. Wills Physics Laboratory
University of Bristol
Royal Fort
Tyndall Avenue
Bristol BS8 1TL
England

Molecular structure by diffraction methods. Vol. 2. By G. A. Sim and L. E. Sutton (Senior Reporters). Pp. xiii+513, Figs. 92, Tables 27. London: The Chemical Society, 1974. Price £17.50.

This second volume in the series is arranged according to the same format as Vol. 1 with three parts: *Electron Diffraction*, *Neutron Diffraction* and *X-ray Diffraction*. All three parts review papers published between April 1972 and March 1973 but the period covered is extended to August 1973 for the neutron diffraction section and to mid-autumn 1973 for the electron diffraction section. Because of the shorter period reviewed than in Vol. 1 and because the electron diffraction section is this time confined entirely to structural results, Vol. 2 is considerably shorter than the 824 pages of Vol. 1. It is a measure of the inflation of book prices, however, that the smaller Vol. 2 costs more. The reduction in size does not correspond to a reduction in the number of references in all sections. The electron diffraction part discusses 139 references (compared with 464 in Vol. 1), the part on neutron diffraction reports 72 references (96 in Vol. 1) and that concerned with X-ray diffraction has 741 references on organic structures, 168 on globular proteins and 1128 on inorganic structures. (The corresponding X-ray figures for Vol. 1 were 631, 146 and 1228.)

Throughout Vol. 2 there are useful references to Vol. 1. Diagrams are used liberally to supplement descriptions in the text and the many tables provide valuable numerical correlations. The team of Reporters is practically the same as for Vol. 1 and they are to be congratulated on having discussed so much factual information in a way which is concise and yet readable. There seem to be remarkably few errors. Every reader is bound to find some sections of the book which are particularly fascinating for him. For the reviewer, one of the most interesting features is the way in