introduced by picture pages displaying equipment, laboratories or personnel evocative of their period, and the contrast between typical laboratory equipment in use in the early '30's and the early '40's, for example, can be quickly assessed from these pages.

Part III consists of concise, self-contained reports on the present state of the subject on an international basis. The following six excellent articles are included in 105 pages: *Theory of forward elastic scattering* (A. F. Moodie), *Surface crystallography by LEED* (M. A. Van Hove), *Gas electron diffraction* (K. Kuchitsu), *Electron diffraction in TEM* (S. Amelinckx), *Inelastic electron scattering* (H. Raether), *Structure determination by HEED* (J. Gjønnes). They trace the historical development of the subject, describe important aspects of contemporary theory and practice, summarize some important results and give some indication of the capabilities of present-day electron diffraction. The articles are of a standard useful to a research student of electron diffraction.

Throughout this volume, readers will find many interesting episodes which are related to the important discoveries and development in electron diffraction. All the electron diffractionists as well as the crystallographers in the other fields and aspiring students should read this book.

DENJIRO WATANABE

Department of Physics
Faculty of Science
Tohoku University
Aramaki-Aoba
Sendai 980
Japan

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Diffraction studies on non-crystalline substances. Edited by ISTVÁN HARGITTAI and W. J. ORVILLE-THOMAS. Pp. 894. Amsterdam and Budapest: Elsevier, 1981. Price US $109.75, Dfl. 225.00.

Diffraction studies on non-crystalline substances is Volume 13 of Elsevier's *Studies in physical and theoretical chemistry*. The volume is based primarily on lectures given at a conference at Pécs, Hungary in 1978. The book consists of twenty-one chapters written by authors with backgrounds in different areas of diffraction studies. The book is loosely divided into five parts; gases, liquids, amorphous systems, polymers and metallic alloys.

The first part concentrates on electron diffraction from gases with chapters related to the history of electron diffraction, determination of geometrical parameters of free molecules, application to organic molecules, determination of the harmonic potential function, the study of large-amplitude motion and the determination of internal rotation. These six chapters cover the field of electron diffraction from gases quite adequately and with surprisingly little redundancy.

The three chapters on liquids discuss some of the more formidable applications of liquid diffraction. The chapter on the structure of molecular liquids describes the determination of the molecular pair-correlation function. This function contains information not only related to the separation of two molecules but also on their mutual orientation. The second chapter on liquids reviews the recent diffraction studies of aqueous electrolytes, giving major attention to the calculation of the partial pair-correlation functions of the different interactions. This chapter also gives an interesting account of the recent diffraction studies of water. The final chapter on liquids describes the use of molecular dynamics to arrive at computer simulations of liquid structure.

Approximately half the book is devoted to diffraction studies of solids. Appropriately, the first chapter by A. Guinier discusses a number of systems that he refers to as intermediary states between order and disorder. The chapters dealing with polymers stress applications of wide-angle scattering although both X-ray and light small-angle scattering are briefly reviewed. The chapter by P. W. Schmidt develops in detail the use of integral transforms for the determination of the particle-size distribution for a system of non-identical particles of similar shape. This is the only chapter in the book that deals extensively with a topic concerned with small-angle scattering. The fifth part of the book covers, with varying degree of detail, the major methods that have been used to study the structure of amorphous metallic alloys. In addition to a discussion of the large-angle X-ray and neutron scattering studies, mention is also made of small-angle scattering and a non-diffraction method, extended X-ray absorption fine structure. The final chapter describes various applications of the electron microscope to the study of amorphous solids. Electron microdiffraction, a technique for examining regions of about 20 Å, is the primary topic.

Most of the chapters are written in the style of a review article with the authors relying on the references for derivations of the relevant theory and detailed description of the experimental methods. The strength of the volume lies in the topics discussed, which for the most part are current and include many of the major recent contributions to the various areas.

HAROLD D. BALE

Physics Department
University of North Dakota
Grand Forks
ND 58202
USA

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Experimental high-resolution electron microscopy. By J. C. H. SPENCE. Pp. xii + 370. Oxford University Press, 1980. Price £35·00.

As the two micrographs in the frontispiece of this book show very clearly, it is possible in electron microscopy to have detail at the atomic level for solid materials.

This itself is not particularly new; but in the last few years there have been important contributions to this expanding field. The good quality of the better commercial microscopes now permits, in principle, every microscopist who is interested in applications in materials science, mineralogy, solid-state physics and solid-state chemistry, ... to conduct research at this level.