termination, Resonance studies, Mass spectrometry, Molecular beams, Electric properties of molecules, and Ultrasonic studies and thermodynamic properties of fluids. Each chapter is written by one or more (up to four) experts in the field.

The chapter on diffraction methods is written by P. M. Harris and R. A. Erickson, and occupies 94 pages. The greater part of the space is allocated to X-ray diffraction, but electron and neutron diffraction are included as well. The treatment is very clear, and takes the reader all the way from the definition of the unit cell to sign relations, though these are given only six lines. There are references to nearly 100 well chosen papers and books.

It is somewhat difficult to say for what class of reader this book will be useful. As already mentioned, it is not a practical textbook, and might perhaps best be described as the underlying theory of experimental methods. It is safe to say that no-one by mastering the chapter on diffraction methods would be equipped to undertake a structure determination, though he might be very well equipped to pass an examination on methods of structure determination. This would depend to some extent on the examiner; for example powder methods, rotation methods, and Weissenberg methods are described without even a diagrammatic sketch of the apparatus. Though there are 31 figures in the chapter, only one represents an actual piece of apparatus (an electron-diffraction camera for gas scattering). Possibly details of the experimental side are given in other volumes of the series, but this can hardly be convenient for the student.

The book is well produced, clearly illustrated, and well indexed. The only error noted is the mis-spelling of Zachariasen both in the text and in the index.

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Advances in X-ray Analysis. Volume 5. Edited by W. M. Mueller. Pp. xi + 564. New York: Plenum Press Inc., 1962. Price $ 17·50.

Volumes 1 to 4 were reviewed in *Acta Cryst.* **14**, 442, and **15**, 625. This volume follows much the same pattern, containing 48 of the 56 papers published at the Tenth Annual Conference on Applications of X-ray Analysis held in Denver from 7 to 9 August 1961, plus one paper presented at the Ninth Conference but not included in Volume 4. As in previous volumes, a very wide field of applications of X-ray analysis is covered, but one gets the impression that the proportion of more fundamental papers is increasing. The first three papers: 'Twenty years of progress in X-ray diffraction techniques' (A. Guinier), 'Crystal structure and stability of refractory phases' (H. Nowotny), and 'X-ray diffraction studies at low temperatures' (C. S. Barrett) are of a review nature. Among the themes that repeat in many papers are the accurate determination of lattice parameters by diffractometer methods, the determination of crystallite size and strain, high-temperature diffractometry, and X-ray fluorescence analysis.

The standard of production and editing of these volumes has been increasing steadily, and Volume 5 is probably as pleasant a book as it is possible to produce by photographic reproduction of typescript. Its publication will be welcomed by all those interested in the practical application of diffraction methods. The subject index, however, still leaves something to be desired. In spite of the large amount of text devoted to the subject, X-ray fluorescence analysis does not appear in the index under any of the three possibilities; there are entries under crystallite size and particle size, without cross reference; there is a large entry under high-temperature studies, but none under low-temperature studies.

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Applied Optics. A bimonthly publication of the Optical Society of America. Vol. 1, No. 3, May 1962.

This is a new journal designed to provide a medium for publication of original work and also for surveys on special topics. The aim appears to be to bridge the gap between pure and applied science in the field of optics. In fact, in a note by the President of the International Commission of Optics, E. Ingelstam, he says 'it is to be hoped that the readers of Applied Optics and the Journal of the Optical Society of America will be largely the same people, so that they, by numerous cross-references, will be taught that applied implies pure and that we cannot in the development of our science dispense with the science of engineering'.

The issue under review contains a series of articles stressing the international nature of research in optics. Each is a survey of work in a particular country written by some of the leading exponents of that country. There are articles on Sweden, Canada, Netherlands, India, Great Britain, France, Italy, Japan, and Germany. Each includes a very useful set of references mainly to survey papers; these articles in themselves go a long way to justifying the publication of this issue.

There are in addition about 15 other papers of varying length covering a wide range of interesting topics including maser and laser developments, spectrometry, microscopy, and thermal imaging by means of the Evaporograph. There are some papers published in languages other than English, and one interesting feature is the publication of a paper in Russian together with the English translation in parallel columns, the mathematics being printed in the middle in common with both texts.

The proportion of theory is fairly high for a journal with the qualification 'applied', but this is certainly helpful in achieving the aim of interesting workers in both pure and applied optics.

168 large quarto pages of glossy paper attractively set, well printed, and with only 15 pages of advertisement, is very good value for $ 2 by present-day standards, and if this number of the journal is typical the new venture of the Optical Society of America will prove a most stimulating addition to the list of periodicals available in this field.

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