organo-metallic and molecular compounds are considered. After that come chapters on structures with large molecules, first the globular proteins, then the fibrous macromolecules of hydrocarbon polymers, polyesters, polysaccharides, and proteins. The author concludes by expressing the belief that important detailed results on biochemical molecules are about to be obtained.

This second part of the book also seems to be very well done. In a few places the account is merely a list of references, but in the main the author has made a real attempt to consider the reasons behind the results. He has some general considerations of bond lengths and on hydrogen bonding in crystals, and he also gives an account of the cylindrical Patterson function used in the interpretation of fibre diagrams. The account of the work on fibrous proteins is particularly good, and brings out well the dependence of this work on results obtained with simpler molecules. In fact all the work described in the chapters on large molecules is heavily dependent on the direct and more certain results on structures with small molecules, and this relationship brings out well the value of the comprehensive survey such as this volume attempts. The chemical formulae and diagrams are numerous and clear, and for the most part are well chosen. However, Fig. 8·4, of the myoglobin molecule, seems a very non-crystallographic and unhelpful one, which is no doubt fated to be copied in many text-books until something better is attained.

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Advances in X-ray Analysis. Volume 4. Edited by W. M. MUELLER. Pp. viii + 568. New York: Plenum Press Inc., 1961. Price $15·00.

Volumes 1–3 were reviewed in *Acta Cryst.*, **14**, 442. Volume 4 follows the same pattern, containing 38 of the 41 papers presented at the Ninth Annual Conference on Applications of X-ray Analysis, held in Denver from 10 to 12 August 1960. A very wide field is covered, from the use of optical transforms (A. Hargreaves) to a grinder for producing analytical samples (A. H. Pitchford), and taking in a good deal of fluorescence analysis on the way. An innovation is a report at the end of each paper of the discussion of it at the conference. The report is very colloquial and presumably *verbatim*.

In the earlier review the absence of indexes was criticized. In volume 4 there is an author index ($4\frac{1}{2}$ pages, double column) and a subject index (7 pages, single column). The author index does not contain the authors contributing the papers, but only the name of the authors they quote, and these in a rather curious manner. An example, which combines the two commonest peculiarities, is the entry Du Mond, Jesse W. M., 256. Page 256 is entirely occupied by a figure, but on the facing page, 257, line 12 contains a superscript reference 6. On turning to the end of the paper (p. 279) one finds that reference 6 is to a paper by Henke and Du Mond. It would have been less work for the indexer and the reader if the index entry had been p. 279. One is glad to have the subject index, but it is rather sketchy. Although many of the papers deal with X-ray fluorescence analysis, this topic does not appear under X-rays, fluorescence, or analysis. The only entry under X-rays is 'X-ray versus gamma rays for void determination in liquids'.

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An Introduction to Applied Anisotropic Elasticity. By R. F. S. HEARMON. Pp. viii + 136. Oxford: The Clarendon Press, 1961. Price 35*s*.

Until about thirty years ago the elegant mathematical structure of the theory of elastic phenomena in anisotropic media remained largely unused. The first practical development sprang out of studies of piezoelectricity and this in its turn gave rise to new and more convenient experimental techniques for measuring the elastic constants. The last fifteen years have witnessed the emergence of a considerable body of literature devoted solely to elastic phenomena, and concerned less with single crystals and more with materials like wood, plywood, laminated plastics and stiffened plates.

This book is accordingly addressed to physicists and engineers faced with practical problems, and seeks to present a digest of the directions in which the theory has been applied. To do this effectively within so slim a monograph the author has had to compress all the fundamentals into an initial chapter of sixteen pages, but he has provided plenty of references to fuller texts (most of which have appeared in the last ten years), and he provides a valuable comparison of the notations used by other authors. The second chapter, dealing with the effects of symmetry on the elastic constants, succeeds (in ten pages) in presenting a comprehensive summary of the present position. The scope of these two chapters has been deliberately restricted, but the limits are clearly stated in the Preface, and where open issues exist (such as the number of independent elastic constants) the present state of the problem is briefly and fairly set out.

The third chapter, dealing with the methods used for measuring the elastic constants of single crystals, sheet materials and polycrystalline aggregates, provides plenty of practical detail and an assortment of results culled from all the above materials. After mastering the material compressed in the first two chapters and doing all his homework the practical man will certainly appreciate the less hurried atmosphere of this chapter and the help it gives him in acquiring a feel for the orders of magnitude involved.

The remaining chapters deal with the analysis of the more important stress and strain systems that can be set up; with wave propagation; and finally with problems arising with anisotropic plates; the emphasis being distributed about equally between single-crystal media and synthetic media. These chapters offer a little more than an introduction, for each is a concise and considered summary of the techniques or analyses attempted so far, and indicates the sorts of problem now in hand.

The author has endeavoured not only to collect up a very scattered literature, but to give due recognition to the important Russian contributions of the past