Although the Orbitron gauge is briefly mentioned, the Orbitron pump apparently was announced after the publication deadline. Nor is there any mention of the stainless-steel-to-glass Housekeeper seal, which is now in rather widespread use. Brevity of prose style occasionally leads to statements that are intelligible to an expert, but possibly not clear to a novice. All in all, these are minor defects.

During the past two years, at least six books on this general subject have been published in the United States. Several of these emphasize one part of the field, such as ultrahigh vacuum, new pumping techniques, or commercial applications. The Dushman-Lafferty book remains the most thorough treatment of the scientific foundations. For those who want a more concise treatment, a good guide to the literature, and the inclusion of the most recent developments, this volume by Lewin, *Fundamentals of Vacuum Science and Technology*, can be recommended as a first choice.

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Crystallography: Winter School, University of Madras

Advanced Methods of Crystallography. G. N. Ramachandran, Ed. Academic Press, New York, 1964. x + 279 pp. Illus. $10.50.

This book is a report of the lectures delivered at the Winter School on Advanced Methods of Crystallography held at the University of Madras in January 1963. The nine lectures can be divided into two internally related groups of three lectures on crystal structure analysis and three lectures on imperfections and disorder and a group that contains three miscellaneous talks. The first group consists of "Image methods in crystal-structure analysis" by M. J. Buerger, "Fourier syntheses for partially known crystal structures" by G. N. Ramachandran, and "The use of anomalous scattering in crystal structure analysis" by S. Ramaseshan. Buerger's lecture is a brief presentation on some aspects of image methods, a subject that is covered much more intensively in his book *Vector Space and Its Application in Crystal Structure Investigations.* The second lecture presents a good discussion of Fourier transforms and the effects of various modifications on the Patterson and electron density functions. The final lecture in the first group presents a good, concise discussion of anomalous dispersion in structure determination. These lectures are of primary interest to the specialist in crystal structure analysis. It is unfortunate that, for completeness, there were no lectures on phase determination and automatic devices.

The three lectures in the second group, "Diffuse x-ray reflections from crystals" by W. A. Wooster, "Diffuse disorder scattering by crystals" by H. Jagodzinski, and "Imperfections in crystals and their effect on x-ray diffraction by crystals" by Leonid V. Azároff, are written in a more general vein and as a unit can serve as an introduction to disorder effects. Wooster makes extensive use of optical transforms which are not only experimentally useful, but an excellent pedagogical device.

In the lecture "Group theory and crystal properties" S. Bhagavantam discusses the relationship between crystal symmetry and physical properties, with particular emphasis on photoelasticity as an example. "Elementary theory of neutron scattering by crystals," by I. Waller, is a very concise presentation, and the uninitiated would do well to use a more extensive source such as the book *Neutron Diffraction* by G. E. Bacon. "Aberrations and line broadening in x-ray powder diffractometry," by A. J. C. Wilson, is mainly a discussion of the effect of physical aberrations on line positions and widths. Wilson also presents a very short interpretation of diffraction broadening.

The majority of work presented in these lectures is available in more detailed analysis in books in the various fields. However, within its limitations, this book can serve as a brief and readable introduction for the crystallographer who desires a nodding acquaintance with work in related fields beyond his immediate specialty. Each lecture has a list of references and, at the end of the book, there are author and subject indices.

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Polymer Chemistry

Determination of Molecular Weights and Polydispersity of High Polymers. S. R. Rafikov, S. A. Pavlova, and I. I. Tverdokhlebova. Translated from the Russian edition (Moscow, 1963) by J. Eliassaf. Israel Program for Scientific Translations, Jerusalem; Davey, New York, 1964. viii + 357 pp. Illus. $14.

Synthetic Hetero-Chain Polymides. V. V. Korshak and T. M. Frunze. Translated from the Russian edition (Moscow, 1962) by N. Kaner. Israel Program for Scientific Translations, Jerusalem; Davey, New York, 1964. x + 564 pp. Illus. $17.95.

Both of these books on polymer chemistry were originally published by the Academy of Sciences of the U.S.S.R. and both were translated into English by the Israel Program for Scientific Translations, Jerusalem. Do the treatises merit translation?

I think they definitely do. The first book is of wide interest, and the second is more specialized. Both are serious and scholarly works that deserve respect and should be of definite value as reference texts. They have to some extent a flavor that is intermediate between a true textbook and an advanced review article. They are useful because of their comprehensive nature, but fall short of excellence because discrimination is sacrificed for comprehensiveness.

What is quite surprising to me is how eclectic these works are. We are accustomed to think of Russian science as being rather xenophobic. These books reveal an intensive study of American, British, German, French, and Belgian literature amongst others. We have thought of the Japanese as being always willing to learn from the best that the world has to offer. It seems that Russian polymer scientists may be beginning a similar trend in their country. There may come a time when the best way for polymer scientists in America to keep up with work originally published in English will be to have Israelis translate Russian texts, based largely on American papers, into English. Stranger things have happened in the course of world history. In the United States the monetary motivation for writing advanced and specialized scientific texts is not always very great, and the prestige value of such texts is sometimes less than the author could obtain by