

Introductory chapters cover electron scattering and the principles of construction of the various forms of instruments. The core of the book describes the way the instruments can be used to obtain information of importance in materials science, with emphasis on metallurgical studies. The section on scanning electron microscopy covers applications to semiconductor devices and the use of x-ray microanalysis, Auger spectroscopy, cathodoluminescence and so on. Then there are brief descriptions of "recently developed" techniques such as high-voltage electron microscopy and scanning transmission electron microscopy. Brief appendices give the elements of real-space and reciprocal-space geometry and introductory ideas on diffraction. It is a clear, straightforward exposition.

There are presumably many people for whom a superficial treatment such as this, with a minimum of theoretical content, will be satisfying and sufficient. On the other hand, it is difficult to see how physics students or graduates could be happy with it. There are too many places where the physical principles are glossed over or ignored. For example, for transmission electron microscopy, the resolution and image contrast are topics of fundamental significance which should be treated with some care, but resolution is not defined at all and one looks in vain for a clear indication of what is meant by the terms "phase contrast," "amplitude contrast" and "diffraction contrast," which are used in confusing disorder. This is not really surprising in a field where the imaging of phase objects is habitually discussed, as in this book, in terms of the ideas developed in light optics for the incoherent imaging of amplitude objects, but it is regrettable.



A cobalt alloy with a secondary phase of filamentary silica (emissive mode). Photo reproduced from R. Barlow and P. J. Grundy, *J. Mater. Sci.*, 1970, 5, 1005, with kind permission of Chapman and Hall, Ltd.

Someone who relies on this book as the ultimate guide for his low-level use or appreciation of electron microscopy will probably not be affected by these finer points or by the logical errors such as those in the descriptions of the reciprocity relationship for STEM imaging on page 141 and of anomalous absorption on page 72. On the other hand, part of the function of an introductory book can be to inspire the occasional reader to a more complete involvement with the subject. For such a reader such misstatements can only cause confusion. Perhaps it is not appropriate, after all, for introductory books to be written by those who give introductory courses. The best simplifications of complex concepts are given by those who live with the complexities.

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book notes

History of Twentieth Century Physics (Proc. of the Int. School of Physics "Enrico Fermi", Course 57, Villa Monastero, Varenna on Lake Como, Italy, July-August 1972). C. Weiner, ed. 457 pp. Academic, New York, 1977. \$39.50

In the summer of 1972 the Italian Physical Society's International School of Physics "Enrico Fermi," which usually focusses on "a field on the forefront of contemporary physics research," instead devoted a session to the history of mainly twentieth-century physics. The speakers included not only historians of science, but also physicists (P.A.M. Dirac, H.B.G. Casimir, Edoardo Amaldi, Victor F. Weisskopf and Lew Kowarski) who had actively taken part in the developments in physics over the last half century. Together, in the words of Charles Weiner, they attempted to "take into account the philosophical and historical roots of the concepts and techniques of physics, the styles of individuals and institutions, and the influences of social and political environments."

The Versatile Satellite. R. W. Porter. 173 pp. Oxford U.P., New York, 1977. \$11.00

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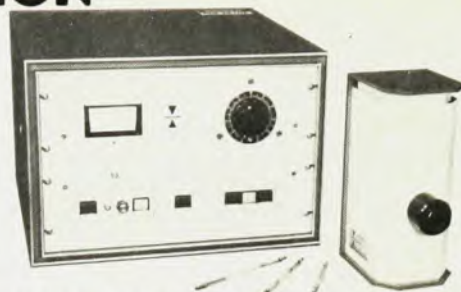
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Ultrasonics International 1977 Conference Proceedings (Brighton, UK, 1977). Z. Novak, ed. 507 pp. IPC Science and Technology, Guildford, Surrey, UK, 1977. \$37.00

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High-Power Lasers and Applications (Proc. of the 4th Colloquium on Electronic Transition Lasers, Munich, June 1977) (Series in Optical Sciences, Vol. 9). K.-L. Kompa, H. Walther, eds. 228 pp. Springer-Verlag, Heidelberg, 1978. \$24.00

Dye Lasers, 2nd revised edition (Topics in Applied Physics, Vol. 1). F. P. Schäfer, ed. 299 pp. Springer-Verlag, New York, 1977 (first edition, 1973). \$19.80

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