

topics that it is quite a challenge to provide a brief, lucid, but not too superficial account of the field. Michael Longo has turned his undergraduate course notes into a rather well conceived and exciting survey of particle physics.

Longo is a high-energy experimentalist, and the viewpoint presented in the book is experimental and phenomenological in emphasis. The book ranges over topics in strong, electromagnetic and weak interactions, with special emphasis on a straightforward description of the relevant phenomena.

An informative chapter on detection devices and on high-energy experiments is followed by descriptions of famous experiments and discussions of their physical relevance. Although the accounts are brief, the "flavor" and style of high-energy physics is rather well communicated. Longo's enthusiasm for the subject clearly shows through, and the full-page pictures of famous physicists and experimental setups add to the attractiveness of the book.

The reader is expected to have some working knowledge of quantum mechanics. The oftentimes unconventional notation could be confusing for some students. A second difficulty with the book is the first chapter, where the quantum numbers, conservation laws, and particle spectrum are all unceremoniously dumped in the reader's lap. In spite of these technical shortcomings, this could be a useful elementary text for an undergraduate course on particle physics.

RICHARD SLANSKY
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New Haven, Connecticut

Electron Optics and Electron Microscopy

P. W. Hawkes
244 pp. Barnes and Noble,
New York, 1972. \$17.00

The subject of electron optics, as it applies to the electron microscope, is a substantial one, with a very extensive literature to which this little volume is the latest addition.

The book contains chapters on the history of and justification for the electron microscope, electron lenses (including their most common aberrations), the electron microscope itself, the scanning microscope and microanalyzer and a short chapter on applications. This global view of the electron microscope is compressed into a little over 200 pages. It can be appreciated, then, that most of the material is in a very condensed form, and many aspects are either glossed over or completely omitted. Nevertheless, the

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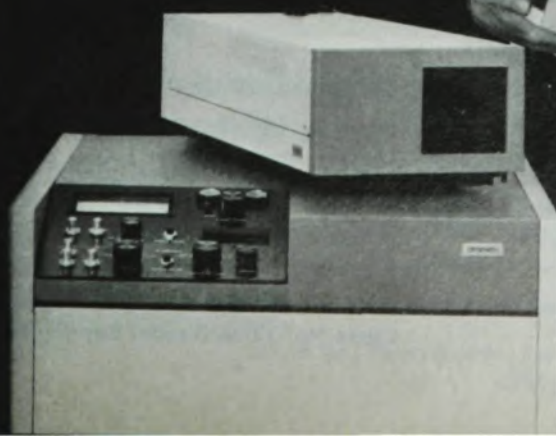
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by Philip R. Wallace, McGill University

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material that is included is valuable and well presented.

The book is written for "the beginner," but precisely what kind of beginner is, to say the least, not clear. If, for example, the book is intended to be useful for the beginning user of electron microscopes, then it would be of little value. Indeed, many beginning users would be completely lost in mathematics before the end of the second chapter, and furthermore, they would find that the very short chapter on applications would be virtually useless. Perhaps the beginner that Hawkes mentions is the beginning student who hopes to emulate Hawkes himself, and this student would indeed find this to be a useful book. Such a student would be unperturbed by the lack of practical information such as relevant dimensions, or specimen-preparation techniques, and would not be in the least concerned that the unit of pressure used throughout is the Pascal rather than the Torr, and would find that the very clear treatment of the properties of electron lenses would be of great help in his further reading. Indeed, it is because of this clear exposition that I would recommend the book not only to the beginner, but also to those advanced users of electron microscopes who would like to renew their acquaintance with the fundamentals of the machine and its limitations.

ALBERT V. CREWE
University of Chicago

Fourier Transforms and their Physical Applications

D. C. Champeney
256 pp. Academic, New York, 1973. £5.20

Mathematics is the exact language that physical scientists use to correlate and interpret their experimental findings and to express their theories. Fourier series, for example, are used to describe periodic functions, presenting them as infinite sums of oscillations at frequencies that are harmonics (discrete spectrum) of the fundamental. The less familiar Fourier transform can express an arbitrary aperiodic function as an infinite integral over a continuous range of frequencies. First used in the treatment of single-pulse phenomena by the electrical engineer, the Fourier transform (and the related operations of convolution and correlation) now find application in optics, acoustics, scattering and diffraction of x rays, neutrons and electrons, and aperiodic effects in electrical circuits. Wider familiarity with this powerful mathematical tool will certainly broaden its field of application. D. C.



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