

versions an exceptional clarity of style and excellent organization. Two concise chapters are devoted to background material on radiation and atomic physics and a survey of the principal types of lasers, and two others deal with theoretical topics relevant to all laser types. The remaining discussion, the bulk of the book, appears under headings corresponding to each kind of laser. Solid-state (ruby and rare-earth), semiconductor, liquid and gas lasers are all covered sufficiently to provide the reader with an accurate picture of their operation. Organic-dye, ionic, molecular, and chemical lasers, which were infants or prenatal when the previous versions appeared, each have sections of their own in this edition. That's not to say that every kind of laser invented to date is included. Lengyel tells us in his preface that he stopped gathering materials for *Lasers* in 1968. Thus the reader will not find discussions of gas-dynamic or TEA (Transversely Excited Atmospheric pressure) gas lasers, electron-beam-pumped gas lasers, or of the ingenious distributed-feedback lasers recently developed at Bell Laboratories. But the current literature on these and other recent developments should be easily accessible for one who has digested Lengyel's exposition.

While the level of sophistication

required to follow this exposition is generally low, courses in quantum mechanics and electromagnetic theory are probably indispensable prerequisites. Nevertheless Lengyel's style minimizes the ratio of math to prose, and physical principles are explained in physical, but entirely correct, precise, and honest, language. Most of the text is devoted to the physics of the various active media responsible for laser action. An instructor seeking illustrative examples of the application of quantum theory and spectroscopy to "real" problems can find a wealth of material here. While laser engineering (as opposed to basic science) is not slighted, it is not embellished, and remarks on peripheral technology such as antireflection coatings or optical isolators are often minimal. There are no set problems following chapters, but illustrative examples of theoretical developments are worked smoothly into the text.

Bela Lengyel is a scientist, a teacher and a scholar. He has spent ample time in classroom and laboratory, and has contributed notably to the field he expounds—just the sort of background that makes for a good general discussion of the important and hitherto largely unsynthesized subject matter of *Lasers*.

JOHN MARBURGER

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Numerical Methods of Nonlinear Algebraic Equations (Conf. proc. Numerical Analysis Specialist Group of the British Computer Society, 6, 7 Jan. 1969, Essex, UK). P. Rabinowitz, ed. 199 pp. Gordon and Breach, New York, 1970.

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Proceedings of the Eighth International Conference on High-Energy Accelerators,

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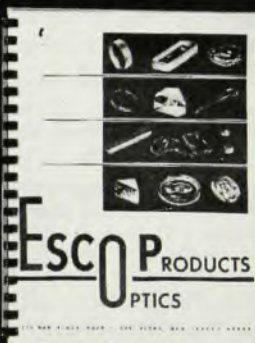
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