



A multistroked flash of lightning. A camera mounted to swing back and forth while its shutter was held open produced the above photograph. Courtesy of New Mexico Institute of Mining and Technology, this illustration appears in *Lightning and its Spectrum. An Atlas of Photographs* by Leon E. Salanave (153 pp. U. of Arizona P., Tucson, Ariz., 1980. \$25.00), which records typical and unusual appearances of lightning, such as bead and ribbon phenomena, and their spectra and explains the techniques whereby the photographs were obtained.

fects. As a result, the present volume is incomplete by itself. A student, even after mastering everything in the book, will have difficulty in analyzing real atomic spectra.

The first four chapters, however, contain excellent summaries of the historical background and application of quantum mechanics to atomic structure that could serve well as a text for a short course on atomic structure. The condensed discussions on Racah algebra and group theory in the next three chapters are more useful as a refresher for those who are already familiar with the subjects than as a text for beginners.

The Thomas-Fermi model and various versions of the self-consistent field method, including the Hartree-Fock method, are treated in the last two chapters with ample numerical examples. Comparisons with experimental data, however, are of limited scope because relativistic and correlation effects are not discussed. There are no exercises in this book, but adequate references are furnished with each chapter.

The book contains useful formulas not easily found in other books, for example, hydrogenic radial functions to $n = 8$, $l = 6$, and the Coulomb interaction matrix elements for f^q configurations. Also, the energy expressions in Appendix III are in the form of a configuration average plus a remainder. This convenient form for the Har-

tree-Fock code, developed by Charlotte Fischer, is one of the most widely used.

As in any first printing of a book with complicated equations and tables, there are some typographical errors, but they can be easily identified. The graph containing 4d and 5d radial functions for the hydrogen atom (page 193) has the wrong number of nodes.

In summary, the book will be very useful to researchers in atomic-structure theory as an excellent source of formulas and recent references. The topics covered in the book, however, are of limited scope, and to analyze atomic spectra of any complexity, the reader will have to supplement this volume with other texts, such as *The Introduction to the Theory of Atomic Spectra* by I. I. Sobel'man or even the original TAS.

YONG-KI KIM

Argonne National Laboratory

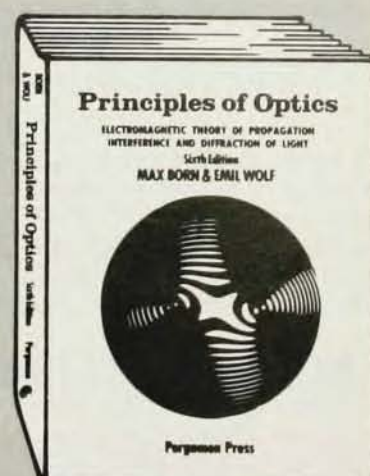
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The book contains up-to-date lists of different manufacturer's transistors, op amps, comparators, etc., along with data on each device, data which are quite valuable both for the person who wants to build a circuit but does not have access to all the manufacturer's catalogs and for someone who wishes to make quick comparisons of different devices.

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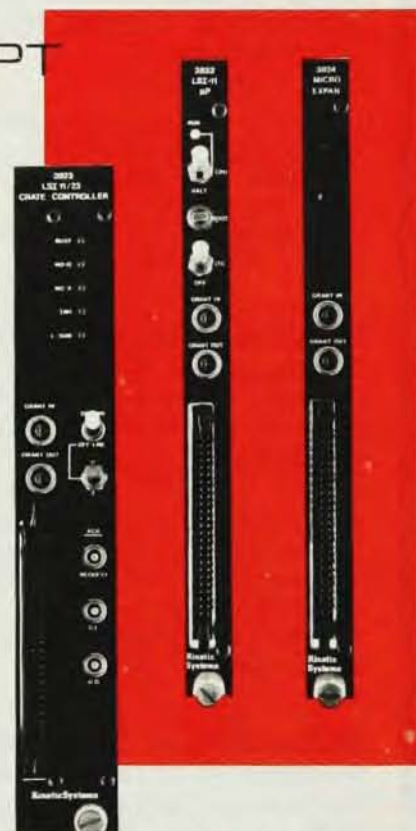
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