Mass Spectroscopy. By Henry E. Duckworth. 206 pp. Cambridge U. Press, New York, 1958. $6.50. *Reviewed by Kamal K. Seth, Duke University.*

Once again the editors of Cambridge Monographs on Physics must be congratulated for bringing out an excellent book which should prove useful not only to the nuclear physicist and nuclear chemist, but also to the wide circle of modern scientific workers, whose work, directly or indirectly, employs the techniques and results of mass spectroscopy. H. E. Duckworth, himself a well-known contributor to this initially specialized field, has written this book mainly for the nonspecialist, essentially for the user of mass spectroscopy rather than the expert. While the book contains enough information about the principles, methods, and instruments of mass spectroscopy, it is the latter half of the book which, it is to be hoped, will be found extremely useful. In the last five chapters Duckworth describes in detail the applications of modern mass spectroscopy in the determination of isotopic abundances, atomic masses, and in a more general manner, in nuclear and molecular physics, and in geological age determinations.

The book contains a table of the latest atomic masses (not mass differences—as is usually done to confuse the layman) and an extensive bibliography and may be heartily commended to the interested as well as to the mere browser. It is not bulky.

Toeplitz Forms and Their Applications. By Ulf Grenander and Gabor Szegö. 245 pp. U. of California Press, Berkeley & Los Angeles, Calif., 1958. $6.00. *Reviewed by Mark Kac, Cornell University.*

This is an excellent and thorough summary of the work done up to 1955 on problems related to spectral properties of matrices $C_{ij} = ((C_{i-j}))$, $C_p = \overline{C}_{-p}$, $1 \leq i, j \leq n$, in the limit $n \to \infty$. Analogous questions for integral equations of the type

$$\int_0^T K(x - y)\varphi(y)dy = \lambda\varphi(x)$$

$K(x) = \overline{K}(-x)$ (in the limit $T \to \infty$) and various generalizations are also treated.

After a masterly presentation of the general theory (first eight chapters), applications to analytic functions, Kolmogoroff-Wiener prediction theory, and to some problems related to random walk are given (three chapters).

Of particular interest to physicists is Section 5.5 (as well as related Sections 10.16 and 11.7) since it has a strong bearing on the problem of calculating the magnetization (at external field 0) of the two-dimensional Ising model.

Other parts of direct interest to physicists are those dealing with spectral properties of stationary processes (parts of Chapters 10 and 11).

Apart from useful applications no reader will fail to appreciate the beauty of the subject and the elegance of composition.

Sourcebook on Atomic Energy (2nd Revised Edition). By Samuel Glasstone. 641 pp. D. Van Nostrand Co., Inc., Princeton, N. J., 1958. $4.40. *Reviewed by Abraham S. Friedman, National Bureau of Standards.*

This second edition of Glasstone's *Sourcebook on Atomic Energy* includes much new material and brings some of the older work up to date. The style and level of the presentation are such as to make the book more useful to the layman and beginning student than to the practicing physicist or chemist.

The book contains new chapters on nuclear reactors and strange particles as well as brief discussions of controlled fusion processes, the newest heavy elements, new techniques (e.g., bubble chambers), and new particle accelerators.

A Treatise on Photoelasticity (2nd Revised Edition). By E. G. Coker, L. N. G. Filon, H. T. Jessop. 720 pp. Cambridge U. Press, New York, 1957. $12.50. *Reviewed by Donald A. Wiegand, Carnegie Institute of Technology.*

A republication of this excellent book which first appeared in 1931 can be justified on several grounds. In the first place the theory necessary to fully understand photoelastic phenomena is thoroughly and concisely developed; second, a wealth of information concerning technique is presented. As an added attraction, the book contains considerable material of historical interest in the field of optics, elasticity, as well as photoelasticity. The editor has, however, made changes pertaining only to errors in the first edition. While this has resulted in the return to print of a familiar volume, it is the opinion of this reviewer that several items could have been brought up to date with little modification of the original text. In the introduction, H. J. Jessop does provide a short review of photoelasticity since the first edition and gives references to important works during this period.

The first three chapters, which comprise almost one half of the book, are devoted to the fundamentals of optics, elasticity, and artificial double refraction. The authors, starting with Maxwell's equations, develop many aspects of optical phenomena including the propagation of light in isotropic and crystalline media, considerations of polarized light, and the concept of the optic axis. In addition various methods of producing polarized light are discussed and several methods of measuring differences in optical path such as the plane polariscope and the Michelson interferometer are considered. In general a specialized but good classical treatment of optical phenomena is given.

There follows a concise development of linear elasticity including the stress and strain quadratic, the lines of principal stress and strain, the stress function, and problems in plane elasticity. The third chapter, which at least in part is a result of a marriage of the first two, is a treatment of artificial double refraction. The relationship of the wave velocities and retardation to stress and strain is developed and approximations are exam-