

BOOK REVIEWS

A Selective Survey of Books on Plasma Physics

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THERE has been of late a veritable outpouring of books on plasma physics. These include, in addition to the titles below, expanded versions of lectures given at symposia or courses, the usual conference proceedings, and other books dealing principally with such closely related subjects as gas-discharge physics, ionized gases, cosmic electrodynamics, etc., but also containing some chapters on plasma dynamics.

Clearly, this aging subject, which had been considered moribund for some twenty years after Langmuir's pioneering research during the 1920's, has undergone a remarkable renaissance—primarily because of the sudden recognition that an understanding of plasmas holds the key to a future of cheap, abundant energy through the taming of thermonuclear fusion. This promise for the future has impelled an army of physicists, mathe-

maticians, and engineers the world over into a frenzied frontal assault, more often characterized by the reckless optimism of the opportunist than by the healthy skepticism of the scientist. Only after repeated bloodied noses and humiliating retreats has a more mature, less quixotic approach been adopted.

The understanding, so bitterly gained by the experience of the past decade, has started to be digested and expounded by the chroniclers and the more philosophically inclined. The resultant flood of books makes a guide for the bewildered reader desirable. The best single choice from among the available books in any field depends on the particular purpose of the reader. It might surprise the outsider, therefore, that the first task of nearly every aspiring researcher in plasma physics has been a cover-to-cover study of Spitzer's

The books discussed:

Allis, William P., Solomon J. Buchsbaum, and Abraham Bers: **Waves in Anisotropic Plasmas**. 280 pp. M.I.T. Press, Cambridge, Mass., 1963. \$6.00.

Anderson, J. Edward: **Magnetohydrodynamic Shock Waves**. 226 pp. M.I.T. Press, Cambridge, Mass., 1963. \$6.50.

*Bishop, Amasa S.: **Project Sherwood—the U. S. Program in Controlled Fusion**. 216 pp. Addison-Wesley, Reading, Mass., 1958, \$7.50; Anchor (Doubleday), New York, 1960, Paper \$1.45.

Cambel, Ali Bulent: **Plasma Physics and Magnetofluid-Mechanics**. 304 pp. McGraw-Hill, New York, 1963. \$11.50.

Chandrasekhar, S.: **Plasma Physics**. Notes Compiled by S. Trehan. 217 pp. Univ. of Chicago Press, Chicago, Ill., 1960. Paper \$1.75.

Chandrasekhar, S.: **Hydrodynamic and Hydromagnetic Stability**. 652 pp. Oxford Univ. Press, New York, 1961. \$16.80.

Cowling, T. G.: **Magnetohydrodynamics**. 115 pp. Interscience, New York, 1957. Cloth \$3.85, Paper \$1.95.

Delcroix, J. L.: **Introduction to the Theory of Ionized Gases**. Transl. from French by Melville Clark, Jr., David BenDaniel, Judith BenDaniel. 162 pp. Interscience, New York, 1960. Cloth \$4.50, Paper \$2.50.

Harris, Lawson P.: **Hydromagnetic Channel Flows**. 90 pp. M.I.T. Press, New York, 1960. \$3.50.

*Ferraro, V. C. A., and C. Plumpton: **An Introduction to Magnetofluid Mechanics**. 181 pp. Oxford Univ. Press, New York, 1961. \$4.00.

*Glasstone, Samuel, and Ralph H. Lovberg: **Controlled Thermonuclear Reactions**. 523 pp. Van Nostrand, Princeton, N. J., 1960. \$5.60.

Linhart, J. G.: **Plasma Physics** (2nd ed.). 278 pp. North-Holland, Voorburgwal-Amsterdam, 1961. \$7.85.

Pai, Shih-I.: **Magnetogas dynamics and Plasma Dynamics**. 197 pp. Springer-Verlag/Prentice-Hall, Englewood Cliffs, N. J., 1962. Textbook ed. \$10.50.

*Rose, David J., and Melville Clark, Jr.: **Plasmas and Controlled Fusion**. 493 pp. M.I.T. Press, New York, 1961. \$10.75.

Simon, Albert: **An Introduction to Thermonuclear Research**. 182 pp. Pergamon, New York, 1959. \$5.50.

*Spitzer, Lyman, Jr.: **Physics of Fully Ionized Gases** (2nd ed.). 170 pp. Interscience, New York, 1963. \$4.75.

*Stix, Thomas H.: **The Theory of Plasma Waves**. 283 pp. McGraw-Hill, New York, 1962. \$10.00.

*Thompson, William B.: **An Introduction to Plasma Physics**. 256 pp. Pergamon, New York, 1962. \$7.00.

*Starred books are considered by this reviewer (who has an admitted bias in favor of controlled thermonuclear-fusion research) as the most generally useful and the most readable accounts for the general reader.