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J. M. ZIMAN

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dissolved, ionic, and interfacial states are covered in six chapters in a highly systematized fashion. The last part of the text discusses chemical equilibria and reaction kinetics of both homogeneous and heterogeneous systems. The book ends with several brief appendices which include a short list of the more important physicochemical constants, and derivations of some mathematical relationships pertinent to earlier parts of the text.

In this reviewer's opinion, this treatise is an excellent example to the next generation of textbook authors who, in an age of almost-overwhelming rate of expansion of knowledge, will find that the tedium and discipline of learning mathematics is really worth the effort after all.

**An Introduction to Discharge and Plasma Physics.** Summer School (U. of New England, Armidale, Australia, Jan.-Feb., 1963) S. C. Haydon, ed. 509 pp. Department of University Extension, The U. of New England, Armidale, Australia, 1964. £A3 10s.

*Reviewed by L. Talbot, University of California, Berkeley.*

Summer institutes have become increasingly popular as a means for providing a concentrated exposé of a topical subject. One of the obvious virtues of a summer course (apparently, even if it is held in January and February, the summer months down under) is that it makes possible the assembling together of a number of authorities whose combined expertise far exceeds that of any single individual who might be available to teach a regular university or industry course. Of course, having a group of experts deliver a series of lectures is no guarantee that the program taken as a whole will be well-organized, coherent, or even particularly informative. In the present instance, I am pleased to report that the effort met with conspicuous success.

The intent of this summer course was, quoting from Editor Haydon's preface, "... to outline in a systematic manner the fundamental properties of ionized gases and to provide the basic physics required for a discussion of engineering problems which involve discharge and plasma phenomena." The thirty-five chapters of the volume represent the formal

lectures of fourteen participants, plus one post-course contribution. The subject matter of these lectures encompasses a wide range of topics, including kinetic theory and collision processes, surface phenomena, electrical breakdown in gases and liquids, plasma properties and interactions with fields, and glow, arc, and spark discharges. The emphasis, as Haydon indicates, is on engineering, and almost without exception, the contributions contain good physical descriptions of the phenomena under discussion and examples of technical application. Although in some cases the presentations are brief, they are not superficial. Each chapter is followed by a list of general references in addition to the particular sources referred to in the text, which should easily enable the reader to dig deeper, if he so chooses. Editor Haydon has done a most commendable job of unifying notation and maintaining a consistent set of units (mks). There is good cross-referencing between chapters, which gives continuity to the book, and an adequate subject index is provided.

Taken as a whole, these lectures provide an excellent survey of the broad and complex field of discharge physics, and I would recommend them highly to anyone wishing to begin study in this area.

**Nuclear Energy in Space.** By Erik S. Pedersen. 516 pp. Prentice-Hall, Englewood Cliffs, N. J., 1964. \$19.95.

*Reviewed by Herbert Malamud, Sperry Gyroscope Company, Division of Sperry Rand Corporation.*

During the 1930's, science fiction stories were common which dealt with the "attic genius" type of scientist, who built an atomic-powered space ship in his back yard and flew off to battle. Such a scientist would have found this book invaluable: it covers, in sufficient detail to be a good introduction, just about every part of the subject to which the title lays claim, and a few related fields outside this direct claim area.

Today's "space ship" builders are, however, teams of specialists, and clearly the men who design nuclear power sources will not also have responsibility for fluid-flow analysis in