

plication beyond the first chapter. The difference lies in the physical problem of particular interest. *Radiative Transfer* is primarily concerned with the conservative (nonabsorbing) medium and attention is focused on the scattering kernel and its possible forms; in *Neutron Transport Theory* the basic scattering process is simple and well defined, the attention here is on the nonconservative case in which the probability of a neutron emerging from a collision may be less, or (in the presence of fissionable material) greater, than unity.

The material in the book is divided into four parts. The first discusses the general formulation of the equations and develops general theorems concerning eigenvalues, eigenfunctions, orthogonality, and completeness. The next three sections concentrate on the important cases of constant cross section, energy dependent diffusion problems with and without spectral regeneration, and the neutron distribution at large distances from the source.

This impressive volume is the first really complete coverage of neutron transport theory to appear. It is surprising that this is so, for almost all of the material has existed in the unpublished literature of the atomic energy programs of the United States, Canada, and the United Kingdom for five to ten years. The commercial prospects of nuclear energy have apparently driven many physicists away from the field. Davison has shown that there is still some physics left in the classical neutron and his book should serve as a needed stimulus to workers in the field by indicating the broad problems and the methods available for their solution, as well as those still unanswered questions which require further investigation.

Basic Physics. Vols. 1 & 2. By Alexander Efron. 692 pp. John F. Rider Publisher, Inc., New York, 1957. \$8.95. *Reviewed by Ira M. Freeman, Rutgers University.*

In yielding to the compulsion to include every detailed item that any teacher or supervisor might look for, the authors of many current high-school physics textbooks appear to have lost sight of an important fact: In order to succeed in this highly competitive field, a new book must do more than wedge in a sentence or two about the latest technological achievement. It should offer something novel in method, attitude, or approach.

It was a truly refreshing experience for this reviewer to examine the book written by the chairman of the physics department at Stuyvesant High School, for here we find an original, effective, psychologically sound method of attack—the “spiral approach” to physics. The student is first offered an overview of some of the simpler aspects of physics. Here, in a treatment which is largely descriptive, he gains a perspective of a substantial part of the whole field, at the same time acquiring confidence and losing some of his inborn antipathy to the subject. Then the student returns to a more penetrating and analytical consideration of the

material which builds on and enhances the earlier and more descriptive treatment.

The two levels correspond in general to the two volumes into which the work is divided, but short-range “spiraling” is accomplished in adjacent chapters as well. Each volume, complete in itself, cuts across the conventional subject-matter divisions. For example, electrical charge at rest and in motion is treated in Book 1, while circuits, electromagnetic induction, ac theory, and electronics are deferred to Book 2. The treatment of alternating current is admirable and includes the use of the vector representation.

Applications are by no means slighted, but they are presented only after the appropriate principles have been developed. The items are well chosen and include many matters of current interest and importance. Magnetic domains, health physics, cryogenics, ferrites, scintillation counters are all here. And, prophetically, the jacket ornament is none other than “Sputnik” itself!

Other features of the presentation are noteworthy. A generous set of “Questions and Problems” of graduated difficulty follows the text of each chapter. These exercises for the most part are qualitative and descriptive in the earlier sections of the book, more quantitative and analytical in the later portions. The mathematical methods used include algebra, geometry, simple trigonometric functions, logarithms, and the denary notation. Teachers will welcome the numerous suggestions for demonstrations that can be done with modest equipment.

The physical make-up of the book is attractive without being ostentatious. The numerous line cuts are crisp and bold, and halftones of the purely ornamental or “gee-whiz” variety are not in evidence.

Dr. Efron has tested his approach to the teaching of high-school physics for over a decade, and the results have been markedly successful. The spiral seems to carry students to an intermediate level from which at least the better ones will wish to continue work in science. It seems certain that the groundwork laid here will make it significantly easier for both student and teacher in college. The content of *Basic Physics* satisfies the requirements of all College Boards, as well as all local, regional, and state syllabi.

Every teacher and administrator of secondary-school physics would profit by examining and reflecting on this stimulating and soundly conceived textbook.

College Physics. By Robert T. Beyer and A. O. Williams, Jr. 656 pp. Prentice-Hall, Inc., Englewood Cliffs, N. J., 1957. \$7.50. *Reviewed by Peter Lindenfeld, Rutgers University.*

What, another book on “College Physics”? Aren’t there dozens of these already, all of them teaching Newton’s laws, Hooke’s law, Ohm’s law? Is this another volume stating these and the other rules which when manipulated in the approved way lead to the required answers on examinations? Do we need more books of this sort?