specialist can hardly afford to be without it, and the general reader possessing a moderate background of mathematics will find it of interest as well. The publishers, and especially the translator, should be commended for having rendered a great service in making available such a valuable book to non-Russian readers.

Physics for Engineers and Scientists (2nd ed.). By Richard G. Fowler and Donald I. Meyer. 553 pp. Allyn & Bacon, Inc., Boston, Mass., 1961. $9.25. *Reviewed by Walter G. Mayer, Michigan State University.*

UPON inspecting this book, the question arises immediately: What justifies the selection of the title which suggests that the engineer is not a scientist? Furthermore, the title notwithstanding, the subject matter treated does not give the reader a special kind of physics. Occasional statements like "the physicist calls this . . ." might only create the impression that physics for the engineer is different from physics for the physicist, and this should be avoided, especially at the sophomore level. The reader will soon realize that he has before him a book on college physics containing mostly material which can also be found in a great number of other introductory texts.

There is, however, a noticeable departure from standard textbooks. The authors feel that introductory physics should not be taught as a series of separated subjects such as mechanics, heat, light, etc., because, as is stated in the preface, "the strict traditional division, when viewed in the light of present knowledge, is both wasteful of time and distracts from the general methods of thinking that give physics much of its power." This pedagogical attempt to unify, although successful in places, has created its own problems of division, e.g., Chapters 3 and 14 are both entitled "Rotational Motion". The former stops with angular acceleration and the latter starts with the introduction of English units. Newton's laws are introduced after motion on curved paths. Discussions of energy and momentum are separated by about 40 pages on electricity.

These and other breaks with tradition occur whenever the authors had to make a choice of sequence and continuity. Their arrangement will probably not disturb the unbiased student, and he will, perhaps, see the conceptual relations between gravitational fields and electric fields since these topics are discussed in two consecutive chapters. But will he have an understanding of the significance of conservation laws in mechanics or the basic principles of mechanics, per se, if the treatment of these topics is presented in various isolated sections scattered over the pages?

It is a bit difficult to decide whether a student without some background in calculus should use the book. Although the authors state that the understanding of the text does not depend on the student's familiarity with various calculus manipulations, they use calculus notation throughout the book, explaining briefly some fundamental mathematical steps. It would appear that

the average student, having just acquired such a sketchy mathematical background, might have difficulties understanding fully Maxwell's equations or solutions to wave equations which form an important part of the rather extensive section on waves. There is a shorter section on statistical mechanics and thermodynamics which is probably out of place if we consider that the reader is to be a first-year student without adequate mathematical preparation.

There are many good illustrations and numerical examples in the text. Sets of problems, divided into easy, medium, and hard exercises, follow each chapter. Answers to the easy and hard problems are found in the back of the book. The table of contents lists 28 of the 30 chapters of the book.

This book should be classified among the various, somewhat unsuccessful, attempts at a noble goal: to teach the basic rules of a complex subject and, at the same time, to produce an over-all understanding of their deeper significance and their conceptual interrelations.

The Electron Microscope. The Present State of the Art. By M. E. Haine and V. E. Cosslett. 282 pp. Interscience Publishers, Inc., New York, 1961. $9.25. *Reviewed by L. Marton, National Bureau of Standards.*

I READ with great interest Dr. Haine's new book written in collaboration with Dr. Cosslett, and I was ready to write a very complimentary book review when, by chance, the occasion arose to hand the book as an introduction to electron microscopy to a young budding electron microscopist. The result of this action was considerably less favorable than I expected. In fact, after having read half-a-dozen pages, the young man decided that he needed considerably more reading before tackling this book. Therefore, I went back and looked at it again and found some of his objections quite justified. Let me give you one example: On page 5, it is stated that focal length and focal distance are given in Fig. 1.6. The authors then proceed to define focal length but fail to give any indication of a definition of focal distance. This omission is remedied two or three pages later but by that time the beginner is lost and he will not understand that focal distance is the distance indicated as z_1 in Fig. 1.6. My test may have been unduly hard, as the "blurb" emphasizes that "the book will be found invaluable by practicing electron microscopists who wish to know more about their instruments and, in particular, about the optics of these". Nevertheless a good review of "the present state of the art" should not be too inaccessible to the beginner.

The book is highly readable and for those who have some background it is an enjoyable experience. Some may object to the choice of examples used by the authors. They discuss this in the preface, pointing out that they didn't attempt to be comprehensive. The "references have been chosen more in terms of illustra-