the real world. Too many authors manage only to convince the reader that probability theory is a special case of measure theory. Happily, the present book by Cox and Miller is a well motivated account of stochastic processes specifically addressed to "statisticians and applied mathematicians interested in methods for solving particular problems." The authors, who are respectively professor and reader of statistics at the University of London, have succeeded admirably in this task and have produced what may well become the modern classic for those interested in the *applications* of the theory of stochastic processes.

The topics to be expected in such a text are almost standard. They include Markov chains, Markov processes (with discrete and continuous states), the theory of random walks, renewal theory and prediction and filtering theory. Of particular interest is the authors' account of the theory of Brownian motion, which includes both the Einstein (or Wiener-Lévy) process and the Ornstein-Uhlenbeck process. It would be hard to imagine a clearer presentation of the mathematics of these processes. The general discussion of the Fokker-Planck equation is also marked by great clarity, particularly in the motivation of the different boundary conditions used. All of the accounts of the choice of boundary conditions that have appeared in books or in review articles have been incomplete or otherwise misleading. Not so the present account. However, only the one (space) dimensional case is considered, and a few words on the multidimensional generalizations would certainly have been appreciated. First-passage time problems are handled very neatly. These reviewers are happy to see an account of Wald's method for calculating first passage time moments that is not strictly tied to a statistical context but is rather more widely applied.

Throughout, the book displays the fact that the authors have actually *used* the techniques they discuss. The result is a volume of great lucidity, one that will certainly reward the reader with insight into the theory and into its applications.

One of the reviewers (KS) wants to register a protest about the quality —or rather nonquality of the binding. His copy of the book, like Gaul, fell into three parts the first time he opened it.

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The physics is central

THEORIE DER WÄRME. By Richard Becker. 320 pp. Springer-Verlag, Berlin, 1966. DM 10,80.

by Rolf Landshoff

Reading *Theorie der Wärme* was like renewing an old acquaintence with my teacher of over thirty years ago. The beautiful clarity of his lectures, which made a lasting impression on me then, has been admirably captured in this book. More even than his well known two volumes *Theorie der Elektrizität* this book demonstrates the extraördinary gift of Becker as a teacher. To him the physical picture always occupies the central position and formalism enters only where it is really needed. It is typical of his approach that he prefers to derive thermodynamic laws by devising "Carnot engines" and he shows repeatedly that this is equivalent to the more common method of exploiting the integrability conditions for the thermodynamic functions, which usually gets the answer somewhat faster. He remarks that his preference is a matter of taste and motivates it by pointing to the more immediate occupation with the process of interest.

The first three chapters on thermodynamics and classical and quantum statistics are followed by many applications from the theories of real gases and solids. Perhaps the most interesting examples are those taken from his own work and from that of his coworkers such as the kinetics of drop formation in a supersaturated vapor and the remarkable improvement obtained in describing the specific heat of solids by a judicious joining of the Debye and the Einstein models. Next comes a chapter on

fluctuations where we find among other topics discussions of the Fokker-Planck equation and of the Nyquist formula. The book ends with a chapter on the thermodynamics of irreversible processes with a thorough discussion of the Onsager relations again followed by several applications.

Becker worked on this book during the last five years of his life. When the book finally appeared in 1955 he had unfortunately just died. A new edition with some corrections was issued in 1961 of which the present edition is a copy. The book is meant mainly as a text but it is a worthwhile addition to the library of any physicist who has a reasonable understanding of German.

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Teaching technicians

PHYSICS FOR ENGINEERING TECHNOLOGY. By Alexander Joseph, Kalman Pomeranz, Jack Prince, and David Sacher. 790 pp. Wiley, New York, 1966. $9.95

by Peter L. Balise

In engineering education, the word "technology" has come to be associated with the work of the technician rather than the engineer, and in this sense the present book is appropriately titled. It was written for students in technical institutes and community or junior colleges by physics professors at the City University of New York, whose evident interest in teaching has been combined with engineering consulting.

The presentation is traditionally organized, but with emphasis on technological applications, as evidenced by one of the six major topic areas being "Electronic and Nuclear Applications." This particular area is treated more briefly than its technological importance might warrant, but obviously space is a limitation when traditional topics like mechanics and electricity must also be covered. There are many practical illustrations that will interest the technological student, although again space limits the thoroughness of their treatment.

As with many introductory textbooks, this one is unlikely to satisfy closely a given teacher's pedagogy. In particular, this reviewer would decry the emphasis on formulas, which students tend to seize upon in lieu of understanding principles. Thus there are three formulas for centripetal force (in terms of speed, period, and frequency). However, the authors do explain centripetal and centrifugal force with great clarity, as they do many other concepts. (Centrifugal force is explained as an inertial reaction, but for engineers it is better interpreted as an inertial force applied so that a noninertial reference frame may be considered as inertial.) Another specific criticism is the lack of a cohesive explanation of units, a basic matter in which students can become hopelessly embroiled. Mks, cgs, and English units are used in an apparent effort to acquaint students with all three systems, but it would seem best to use only mks units except where English units are unfortunately standard in some areas of engineering.

The book is well indexed and has a moderate number of problems (solution set available to instructors). Inevitable criticisms notwithstanding, its clear explanations and good illustrations make it a quite attractive text.

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The reviewer is a professor of mechanical engineering (at the University of Washington in Seattle) concerned with better integration of physics and mathematics into engineering education.

A condensed treatment

SPACE-CHARGE CONDUCTION IN SOLIDS. By R. H. Tredgold. 143 pp. American Elsevier, New York, 1965. $10.00

by H. J. Hagger

Space charge plays an important role both in dielectrics and in semiconductors. During the last few years a great field of research was opened in investigating the dark electronic currents carried by space charges injected into dielectrics and large-gap semiconductors. One successful event in this field is the thin-film dielectric triode by Weimer. Because this field