Five of the articles deal with the theory of irreversible processes, four others with diverse topics. H. A. Lorentz in his famous Collège de France lectures (1912) coined his famous remark concerning the insensibility of the entropy against its different statistical definitions. Reading these articles on irreversible processes, it seems that there is a similar insensibility of the transport equations against the various assumptions which go into their derivation. N. C. van Kampen, in his article, emphasizes the importance of a macroscopic subdivision of the space in the derivation of the basic "master equation". He is inclined to disbelieve Bogolyubov's method of derivation of the transport equation (p. 185) which in turn forms the content of E. G. D. Cohen's lectures. This is one of the clearest expositions of Bogolyubov's fundamental ideas and of the recent work done in this field by the lecturer and by Uhlenbeck with his school. L. van Hove reports on his work concerning the derivation of the master equation. His ideas in turn differ both from Bogolyubov's and from van Kampen's, since in his approach the irreversible behavior of a physical system depends upon particular properties of the perturbation. E. W. Montroll's paper deals with the derivation of the quantum-mechanical kinetic equations. P. Mazur discusses the foundations of nonequilibrium thermodynamics.

The remaining papers contain different topics. N. M. Hugenholtz describes the field-theoretical approach to the description of interacting fermions. K. Huang gives an elementary outline concerning our understanding of superfluid helium. H. Wergeland discusses special topics in fluctuations and in stochastic processes which engaged his and his co-workers' attention during recent years. Finally, the book starts with a survey of statistical mechanics by B. R. A. Nijboer.

It is hardly necessary to add that all the lectures are clear, comprehensive, and extremely interesting. May it serve as an appetizer to many others.

Analogue Computation. By R. W. Williams. 271 pp. Academic Press Inc., New York, 1961. $9.50. *Reviewed by Peter L. Balise, University of Washington.*

ALTHOUGH Dr. Williams states in his preface that "relatively few books have been written on analogue computing", there is ample variety ranging from laymen's introductions to good treatises. Nevertheless, this work is a unique contribution; emphasizing components, it surveys the subject while discussing interesting details not commonly found elsewhere. And its British flavor, both in equipment described and style of writing, is refreshing.

The book requires no prior knowledge other than elementary calculus and electrical engineering, but it is apparently not at all intended to prepare one to use a computer. Scaling is not mentioned, and there is no explanation of simulating differential equations, even in the chapter on operational amplifiers. The introductory five pages of this chapter emphasize transfer functions obtainable by input and feedback networks; the remainder is devoted to effects of component imperfections and amplifier design. The other chapters include unusually extensive discussions of potentiometer loading, potentiometers as function generators, Hall-effect multipliers, and some other topics both relatively rare and common, but little on techniques of use. For example, the section on time delays only illustrates the second-order Padé approximation and mentions other techniques. The most unusual feature is the attention given to ac methods and servomechanisms. The application of servos to ac computation is emphasized, but there is also considerable discussion of general aspects like servo stabilization.

Notwithstanding its subtitle, *Techniques and Components*, this volume is not recommended as a text or reference for general computer users. But designers and users of special-purpose computers, particularly ac equipment, will find it interesting.

Quantum Mechanics for Mathematicians and Physicists. By Ernest Ikenberry. 269 pp. Oxford U. Press, New York, 1962. $8.00. *Reviewed by J. Gillis, Weizmann Institute of Science.*

THIS book is intended for senior undergraduate or junior graduate students. There are already so many books, all covering more or less the same material, that it is refreshing to be able to recommend this one. The exposition is extremely lucid. Moreover, the presentation leans very heavily on operators, commutators, Poisson brackets, etc., and though this may be conceptually tougher than the straight Schrödinger approach, it is probably a better introduction to more advanced work. Another point is the systematic parallel discussion of many problems in both the coordinate and momentum representations. It happens too often that a student is taught in terms of the former and can never afterwards think of the latter as anything but a mathematical trick. A work in which the equal status of both representations is stressed is to be welcomed. The examples are well chosen and the historical notes are interesting.

Orthogonal Polynomials. Estimates, Asymptotic Formulas, and Series of Polynomials Orthogonal on the Unit Circle and on an Interval. By L. Ya. Geronimus. Transl. from Russian. 242 pp. Consultants Bureau Enterprises, Inc., New York, 1961. $9.75. *Reviewed by T. Teichmann, General Atomic Division, General Dynamics Corporation.*

ORTHOGONAL polynomials form the simplest orthogonal sets, except for the trigonometric functions, and as such are of great interest as a basis for the expansion of various classes of functions. While the physicist is mainly interested in special properties of these series expansions, the mathematician is generally more concerned with questions of convergence and asymptotic behavior, and it is these aspects to which attention is directed here.

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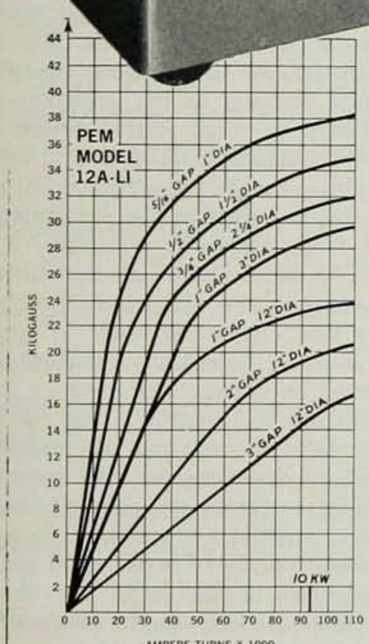

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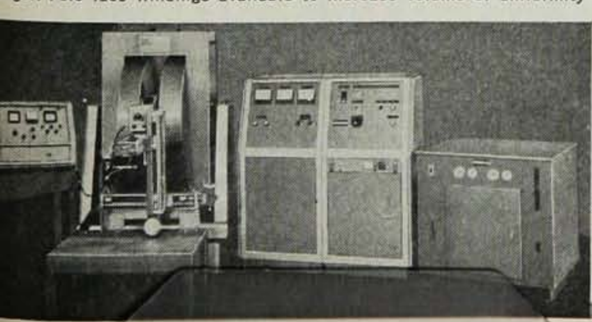

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thogonal on the unit circle (to which all cases of interest can be transformed). While many of the results may seem specialized except to the pure mathematician (e.g., the theorems of Luzin, Fatou, Privalov, etc.), there are a number of results on inequalities and transformation of series which are of more general interest.

The topic of the book is thus analysis and approximation theory in the pure mathematical sense, and as such it provides a compact, modern, and relatively easily read description of the field, which should prove useful to the research mathematician. Its use as a reference work was obviously intended by the author, for a major section of the book contains a summary of all the important theorems and definitions and a table of asymptotic relations. On the other hand, while at least some of the questions were originally stimulated by aerodynamic problems, the physicist need not expect to find much of immediate usefulness to most of his work, though the application of some of the inequalities and certain of the asymptotic estimates could prove useful in some function-theoretic arguments occurring in quantum electrodynamics.

Theoretical Physics. By Gerhard A. Blass. 451 pp. Appleton-Century-Crofts, Inc., New York, 1962. $8.50. *Reviewed by Jacques E. Romain, General Dynamics/Fort Worth.*

WRITING a textbook of acceptable length on theoretical physics at the first-year graduate level is an arduous task, and writing one that would be above any criticism is probably impossible. The author chose to approach the task the hard way, namely, by introducing original features in the presentation. These are: (1) inclusion of some fairly uncommon topics, e.g., inductive derivation of Newton's inverse-square law, the brachistochrone, the ellipsoid of inertia, and the deductive derivation of the conventional electromagnetic laws from Maxwell's equations; (2) detailed development of some rather lengthy mathematical derivations, such as the gyroscope equations and the equations for heat conduction; and (3) stress on the concept of invariance throughout, a particularly useful feature that must be warmly welcomed.

As a general rule, the physical meaning of the mathematical statements is duly stressed, and the reader is helped by many carefully drawn figures. The essential features of each question or theory are clearly brought to the foreground. An extended mathematical basis is not assumed; the author provides concise (and sometimes beautiful) expositions of the vector and tensor notions required for subsequent use, and of such mathematical questions as spherical harmonics. (However, the extension of the tensor formalism to general coordinates is not prepared.)

The stumbling-block in writing such a textbook is the necessity of limiting its length. Unfortunately in this respect the present book does not escape criticism. The author manages to convey the essential information, but this result is achieved at the expense of the