namical concepts like mass, weightlessness, energy, and work. All in all, the book does not belie the author's stated aim. Contrary to the publisher's claim, however, its utility is restricted to the introductory level. The usefulness of this little book for the uninitiated might have been greatly enhanced if it contained some qualitative or semiquantitative discussion of the interesting perturbations of artificial earth satellite orbits, due principally to earth oblateness and atmospheric drag.

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Electrical Engineering

The Nature of Induction Machines. Philip L. Alger. Gordon and Breach, New York, 1965. xiv + 516 pp. Illus. $25.

The first edition (1951) of this important book has been out of print for several years. The importance of this second edition is accentuated by changes that have been made in the education of engineers during the last decade. Students today are acquainted with only the barest outline of the theory of electrical machines. Although only a few people will make direct use of this book in teaching, it will be very useful as a developmental tool and a reference work for engineers who are designing induction motors or incorporating such motors into appliances, drives, and control systems.

The principal merit of the book is its comprehensive coverage of nearly all of the aspects of this most important class of electromechanical energy converters. Alger defines the purpose of his book as follows: "To give its readers an understanding and a visual perception of, and some familiarity with, the behavior and uses of induction machines." The author is uniquely qualified to accomplish this task, because the modern induction machine is largely a product of his pioneering contribution to the design and theory of rotating machines.

The first five chapters cover the basic principles of the induction motor, its similarity to the static transformer, the rotating magnetic field, and methods of performance calculation. The next five chapters are concerned with developments made by the author during the many years he has worked, and with the designing process, reactance calculations, torque-speed characteristics, and the effects of higher harmonic fluxes which are caused by the uneven distribution of the air gap permeance caused by the slotting of the cylindrical members of the machine. Kron's generalized theory is introduced and then used to develop equivalent circuits for single-phase induction motors.

The author's recent contribution to a method of reducing starting currents and increasing starting torques by complementing the usual copper or aluminum bars with alnico bars is described in detail. Extensive consideration is given to a recent development, using silicon controlled-rectifiers in stepless speed control of induction motors, that will extend still further the broad application of these machines.

The style is readable, and the exposition is lucid. Clear pictures of each phenomenon are provided, and equivalent-circuit analogies are generously employed. In subsequent printings, the addition of a table of symbols would aid in reading through this rich profusion of ideas. For the serious student and the specialist who wish to study the subject in depth, there is a comprehensive bibliography at the end of each chapter.

In this book Alger shares with the next generation of engineers his lifetime experiences as a thoughtful, productive engineer. No designer in the field has more to share.

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Ribosomes in Protein Synthesis

The Physical and Chemical Properties of Ribosomes. Mary L. Petermann. Elsevier, New York, 1964. xii + 258 pp. Illus. $10.

This monograph (221 pages of text) by Mary Petermann will be a welcome guest not only in the laboratories of those involved in studying the physicochemical properties of ribosomes but also in the laboratories of those who look into protein synthesis. The author really covers the field: a short history of ribosomes, their occurrence, separation, preparation, and purification; and their chemical composition [including studies on the structural protein(s) and RNA(s) of the particles] and physicochemical properties, including the involvement of "messenger" RNA and transfer RNA with ribosomes. In addition, 972 articles (up to May 1964) are cited, with clear-cut summaries as to the nature of these references provided in the text; this will be very helpful to investigators in a field whose growth is quite logarithmic. In some instances, as in the separation and purification of the particles, in their dissociation, in their binding properties, and in the nature of ribosomal RNA, all fields in which the author has been long active, she goes into some detail on the experimental procedures that are involved.

What I particularly liked about the book are the quite numerous critical comments, both on procedures and results, which are dispersed among the allusions to published papers; in other words, the book serves not only as a summary of work already done, but also as a guidepost for future experiments. It thus makes quite clear that, notwithstanding the past decade of work, and notwithstanding the simplified hypotheses which have been put forth, we actually know with assurance very little concerning the role of ribosomes in protein synthesis. For those already in the field, certainly for those going into it, the possession of this book is a necessity; it fills a gap in an important subject. For it is a rather good example of how to condense a subject with clarity, and thus it is not for the dilettante nor for the casual observer of the scene, but for the serious worker in the field.

My one criticism is to note that $10 is a rather steep price to pay for a book which, considering the nature of growth in this field, may well have to be modified in many particulars within its short lifetime. Indeed, between the beginning and the termination of the author's period of writing the book, so many new papers appeared that, in a period of six months, some 200 reference allusions had to be included in an addendum. Nevertheless, at the moment this book is the best extant critical summary and review article on ribosomes.

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