Book Reviews

Studies in biophysics: the critical temperature of serum (56°). Lecomte du Noüy. New York: Reinhold, 1945. Pp. vi + 185. (Illustrated.) $3.50.

The group of closely related experimental researches described in this monograph include much of the available data to justify the author's point of view that "serum is a complex, fragile liquid." His contention is that it must be examined "kinematically" in order to obtain a true picture of its biological properties. Quantitative results were attained by refining old techniques of measuring viscosity and surface energy, and creating new ones by employing optical precision methods for determining the absorption and scattering properties of serum near its inactivation temperature (56° C.).

The evidence points to profound modifications taking place in the structure of the proteins, and of the lipoprotidic complex around 56° C. Du Noüy concludes that it is through the systematic further study of the "serum molecules" possessing immunological properties, and of the globulin fraction of the serum, that rapid progress in immunological problems will be made.

The Introduction is followed by 11 chapters discussing adsorption (monomolecular layers), viscosity, rotary power and dispersion, absorption and scattering, coagulation by heat, sedimentation, electric conductivity, hydrogen ion concentration, fixation of ether by serum, interfacial tension, and ultraviolet absorption. Detailed data and graphic results are presented to show how these properties vary with changes in temperature. Variations around 56° C. are discussed in detail.

To the physicist who is teaching biophysics this is recommended as an excellent source for illustrative material. To the biologist and medical scientist it can be recommended as an example of the biophysical approach, which the basic biological research of the future must follow to attain its ideal quantitative goal.

The author's distinguished contributions in this field are in themselves a more than sufficient insurance of the value of the monograph.

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Principles of radio for operators. Ralph Atherton. New York: Macmillan, 1945. Pp. x + 344. $3.75.

This book is the outgrowth of the author's experience in training Navy men and women as radio operators. Its 16 chapters were assigned, one chapter per week, during a 16-week course. The subject matter is well selected for this purpose. Each chapter includes descriptions of appropriate demonstrations and experiments as well as review tests and lists of available films for visual-aid instruction. The general plan of instruction is excellent.

In general, the discussion of batteries, meters, and radio apparatus is superior to that of fundamental electrical theory, motors, and generators. Weaker chapters are due, in part, to a loose and often confusing style of exposition. The better chapters are well written.

Chapter 5, "Motors and Generators," is particularly inadequate in view of the importance of rotating machinery in radio communication. Some explanations are not clear and appear erroneous. In places, even a well-informed reader is not sure what the author has in mind. Students, for whom the book is written, will find portions of this chapter obscure and confusing. With the exception of one sentence on the starting-box for d-c motors no mention is made of motor and generator starting and protective equipment. A-c machinery is passed over hastily and quite inadequately.

A 41-page appendix of miscellaneous information useful to the radio operator is included. Rules on "Safety First" when handling radio transmitters and standard instructions for giving artificial respiration are commendable material. Less justified are the 30 pages devoted to tables of vacuum tube characteristics and socket connections. Such information, while possibly useful to the radio operator in "trouble shooting," is primarily of interest to the designing engineer. The space required for these tables might have been used to better advantage for material to strengthen portions of the text.

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Electronics for engineers. John Markus and Vin Zeluff. (Eds.) New York: McGraw-Hill, 1945. Pp. x + 390. (Illustrated.) $6.00.

This rather unusual book is a collection of 142 articles, reference sheets, charts, and graphs selected by two of the editors of *Electronics* from the files of this trade journal for the past 10 years and reprinted for the use of electronic engineers. The result is a book which is excellent in parts, which covers a wide range of topics, and which has represented a great deal of labor in computation on the part of the authors responsible for the charts and graphs. The faults of the book arise because the editors have restricted themselves to such material as has been submitted for, and accepted by, *Electronics*. This method of selection has unique merits and unique faults. It surely means that, in the opinion of both an editor and an author, the material presented has timely engineering interest. However, the use of such a method insures neither completeness nor uniformity of treatment on any given topic. The quality and worth of any given section of the book is determined largely by the care and judgment used by the authors of the papers making up the section.

The range of subjects treated is wide. The greater portion of the book is devoted to circuit elements, transmission lines, and electric networks intended for specific applications, with correspondingly less emphasis on

vacuum tubes and physical electronics. Thus, there are sections on components such as capacitors, iron-core transformers, permanent magnets, relays, and r-f coils and transformers. In the field of circuit design, there are papers on audio circuits, filters, wide-band amplifiers, and television circuits. Miscellaneous topics treated include pulses, antennas, electronic heating, and industrial control. There are no papers on magnetrons, klystrons, cavity resonators, or wave propagation.

The fact that a topic is of sufficient importance to warrant inclusion in the book by no means indicates that it will receive a well-balanced treatment. Thus, 14 papers deal with transmission lines, including one which describes the extremely useful Smith chart for making line calculations. Lines are treated adequately from an engineering-design point of view. In similar fashion, the treatment of electronic heating is well rounded. By contrast, the broad field of oscillators is dismissed with two papers, both fair: one on phase shift oscillators, and the second on the temperature coefficient of quartz. Few engineers would consider the treatment accorded oscillators at all adequate.

The greatest value of this book arises from the fact that it furnishes to the engineer a wide variety of information in a form convenient for reference. The book is to be recommended in particular to those engineers who enjoy using charts and graphs in making their own calculations.

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Human biochemistry. Israel S. Kleiner. St. Louis: C. V. Mosby, 1945. Pp. 573. (Illustrated.) $6.00.

There has long been need for a textbook on biochemistry which presented all the essential facts regarding the subject from the viewpoint of its usefulness in the practice of medicine. The author states in his Preface: "It is not so many years since physiological chemistry was essentially a pure science course in medical schools and reference to clinical applications was incidental if not accidental. . . . The name biochemistry has come half way from the laboratory to the clinic. The student now is shown the subject as an integral part of the practice of medicine—not just as a part of the medical curriculum. He learns that advances in every branch of medicine, surgery, and dentistry, have been made as a result of biochemical research, that the human body *is* applied biochemistry, that the entire field of physiology is a series of biochemical reactions and pathological phenomena result from disturbances of these same reactions, and that biochemical discoveries are more and more responsible for progress in diagnosis and therapeutics. The present volume is an attempt to bring home to the student these clinical aspects of biochemistry without usurping any clinician's domain and without neglecting the fundamentals." The author would appear to have been very successful in his efforts to attain these objectives, and the book should hold the interest of those students who look forward to the practice of medicine and also stimulate those who vision a scientific career in medicine.

It could not be expected that in this relatively brief book it would be possible to cover fully all the essential facts of biochemistry and to discuss their most important clinical applications as well. However, the author has used excellent judgment in the fundamental biochemistry he has included, although in some cases the brevity may suggest a lack of importance that is not intended. Most departments of biochemistry employ their own laboratory directions. In accord with this the author touches on the principles of only a few of the most fundamental methods. This materially aids in concise and direct presentation of the subject.

Active fields of biochemical research such as enzymes, vitamins, and hormones are excellently presented, while the discussion on carbohydrate, lipid, protein, and mineral metabolism and water and acid-base balance would appear commensurate with the scope of the book. Practical clinical applications of biochemical facts and methods will be noted on nearly every page of the book, but such topics as diet therapy, basal metabolism, changes in the chemical composition of the blood, and recent clinical applications of biochemical methods are given a fuller discussion than is found in most other texts on biochemistry. Presentation of biochemistry from this point of view cannot help but instill in the minds of medical and dental students the usefulness as well as the practical importance of the subject.

In the classification of proteins, in the chapter on proteins, the author omits the third group, "Derived Proteins," given in the usual classification, for the reason that this group includes either denatured proteins or mixtures of protein decomposition products. Although this is true, most biochemists will probably still feel that we need a heading to cover this group of substances. Like many other first editions, the book contains a number of typographical and other minor errors. These will probably soon be corrected and other minor changes made to strengthen the original plan of the text.

The book can be recommended to teachers of biochemistry, especially those who believe that in the presentation of the subject stress should be given to practical applications as well as to fundamental principles.

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