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### College Physics

The author has done much to make the book interesting and clear: the brief historical backgrounds for various experiments and principles with an occasional anecdote help to clarify as well as make seem familiar these experiments and principles.

The use of simple numerical computations within the body of the text material to illustrate the principle being discussed is helpful; this serves to make the student feel familiar with material as well as to clear away any "small last doubts" about the meaning of text.

The inclusion of problems with answers and problems without answers with a clearly indicated correspondence between the two sets of problems is a direct way to train the student. Problem working becomes interesting and this characteristic gives a definite advantage to the book as a text.

The introduction of the chapters with practical everyday physical observations, which organizes for the student a kind of general experimental background for the results to be obtained in the chapter, formulate a purpose for reading the material in the chapters and makes the principles more acceptable.

The author has given special attention to the clarification of the usual pitfalls of students such as meaning of phrases "head of water," etc., and the distinguishing between "mass" and weight, etc.

The last four paragraphs above give characteristics of the text that are quite important for the avowed purpose of the text: to make the explanations in the book clear enough that the instructor may devote most of the classroom time to extensions and applications of text material. This makes a flexible text—i. e., the text may be used equally conveniently for premedical physics courses as for engineering physics courses—the classroom application would be different.

The selection of topics is fairly satisfactory and the topics have been arranged in a way that is not disjointed but quite convenient for making daily assignments cover a chapter at a time.

There are a few possible improvements that might be suggested: the diagrams would be clearer if the parts of the apparatus or figure shown bore names instead of letters, and if the diagrams were designated not only by a figure but also by a brief explanatory legend. More attention should be given to transformations between different systems of units.

The topic of elasticity is not given enough attention compared to that given to the subject of heat.—*Kenneth P. Yates.*

**College Physics**, Abridged, Revised Edition, by H. A. Perkins. Prentice-Hall, New York, 1943. \$4.00.

## BOOK NOTICES

### Steel in Action

This book attempts to present, in condensed form, a rather comprehensive survey of the field of ferrous materials. Among the subjects dealt with are the history of the use of iron and steel, the industrial development, the metallurgy and technology, the economic and political aspects, and many other phases of the subject including some speculation on the probable trends of future development.

The introductory chapter presents a spectacular picture of the ubiquity of steel and its great variety of uses, from such articles as hair pins to "sleek ocean liners." This is followed in the second chapter by a comprehensive historical chronicle of the iron and steel industries throughout the world from the earliest records to modern times. Of particular interest is the discussion of Biblical references to iron making, and legends regarding it in Egypt and Asia Minor during Biblical times. Excavations, including the tomb of Tut-ankh-amen, have yielded iron implements, and iron was apparently in use before 3000 B. C. The early history of iron for many countries, such as, India, China and the Roman Empire, including Spain, Belgium and Gaul, is presented. Later developments in Britain, Germany, Sweden and, in colonial times, our own country are discussed. Of particular interest are the descriptions of early manufacturing methods in this country. These descriptions include some data on prices and wages.

Under the chapter heading "Manufacture of Iron and Steel" are discussed first, the ores of iron with some reference to mining methods; secondly, the production of coke is surveyed, with a brief description of the by-products and some figures on yields of both coke and by-products. A condensed, but fairly complete description of the blast furnace, open hearth, Bessemer and electric furnaces is followed by a similar discussion of various rolling and finishing processes. The chapter is well supplied with illustrations and flow sheets.

A four page chapter entitled "Carbon Steel" is devoted almost entirely to a discussion of the effects of impurities in such steels.

The discussion of alloy steels includes descriptions of the various alloying elements, e. g., nickel, chromium, tungsten, etc., and their effects on physical properties, heat treatment and metallographic structures.

From here on, the author delves into fields which are apparently more to his personal interest. The book takes up the iron resources of the world and the constant political struggles to dominate these resources. The sources of the ores of iron and its alloying elements are listed in great detail as are also the materials that enter into the smelting and refining processes, such as, fireclay, limestone and magnesite. The subject of scrap, its importance in steel production and its relation to steel business trends are discussed. As the story develops the positions of the various countries with regard to wartime steel production and requirements is elaborately pictured and credit is given American industry for its rapid development in meeting these conditions. The story ends with a glittering picture of "things to come" in the postwar world.

The book contains material enough for at least two, much larger volumes. The chapter on the early history of steel alone could be expanded into a fascinating story. The four chapters devoted to manufacture and technology are too condensed to be of much value to anyone not already acquainted with the subject, and too elementary to be of much interest to the initiated. The latter half of the book, devoted to the economic and political aspects of steel, seems unconnected with what precedes.

Throughout the text the reader is presented with fact after fact in rapid succession but each statement emphasized with superlatives, apparently to the exclusion of all others. All details are included. The author seems unwilling to omit or relegate to tables any of the items of production, consumption or cost but recites them in paragraph after paragraph of monotonous regularity.

There are no references given although the material has been selected from many sources and undoubtedly represents intensive bibliographic research. The author's connection with the American Iron and Steel Institute would indicate that he had spared no pains in collecting his material. Certainly a selected bibliography would greatly enhance the technical value of the book.

The scope of the book makes it unsuitable as a text as it indeed is not intended to be. As a popular story it would have been better had it been expanded to at least twice its present length. Nevertheless it contains much important information and should prove a valuable reference book to all those who are actively or casually interested in the iron and steel industry.—*James O. Lord, Associate Professor of Metallurgy, Ohio State University.*

**Steel in Action**, by Charles M. Parker, American Iron and Steel Institute. The Jaques Cattell Press, 1943. Lancaster, Pennsylvania. 221 pages. Price \$2.50.

### Frontiers of Cytochemistry

Frontiers of Cytochemistry is based on a symposium which was organized in honor of Dr. R. R. Bensley for his notable achievements in the field of histochemistry. This special symposium presented at the University of Chicago on November 13, 1942, was limited to the theme of the physical and chemical organization of the cytoplasm, the principal subject of the investigations of Dr. Bensley and his students for the past decade.

Most biologists will find this volume of especial value and interest for in this collection of papers is presented not only an historical account of the rapid progress made in recent years in this field of fundamental knowledge but the lines along which new discoveries may be expected in the future. Students of cellular biology who have been puzzled by the speed, orderliness and rhythmicity of cellular processes and the unique physical and chemical properties of the cytoplasm will find here significant information regarding structural, chemical and functional relationships.

Of particular interest to the morphologist is 1) the account of the isolation and chemical analysis of mitochondria, 2) the separation of the fibrous proteins ellipsin and plasmosin which are apparently responsible for the stability of cell structure and the sol-gel transformations in the cytoplasm respectively, 3) the discovery and separation of submicroscopic glycogen particulates and 4) the isolation and chemical analysis of the submicroscopic particulates of Claude. Doubtless the physiologist, pathologist, biochemist and physical chemist will find material of equal interest and profit.

Sixteen papers are listed in the table of contents, the titles and authors of which are as follows:

Foreword	Norman L. Hoerr
In Appreciation of Professor R. R. Bensley	E. V. Cowdry
The Chemical Structure of Cytoplasm as Investigated in Professor Bensley's Laboratory during the Past Ten Years	Arnold Lazarow
Some Considerations on the Application of Biological Oxidation-Reduction Reaction Systems to the Study of Cellular Respiration	E. S. Guzman Barron
Ultracentrifugal Studies on Cytoplasmic Components and Inclusions	H. W. Beams
Electrolytic Solutions Compatible with the Maintenance of Protoplasmic Structures,	Robert Chambers
Distribution of Nucleic Acids in the Cell and the Morphological Constitution of Cytoplasm,	Albert Claude
Experimental Epidermal Methylcholanthrene Carcinogenesis in Mice	E. V. Cowdry
Histochemical Analysis of Changes in Rhesus Motorneurons after Root Section,	Isidore Gersh and David Bodian
Methods of Isolation of Morphological Constituents of the Liver Cell	Norman L. Hoerr
Electrolytes in the Cytoplasm	Oliver H. Lowry
Fibrous Nucleoproteins of Chromatin	A. E. Mirsky and A. W. Pollister
The Ultrastructure of Protoplasmic Fibrils,	Francis O. Schmitt, Cecil E. Hall, and Marie A. Jakus
Mineral Distribution in the Cytoplasm	Gordon H. Scott
Studies on Macromolecular Particles Endowed with Specific Biological Activity	Kurt G. Stern
The Chemistry of Cytoplasm. (Reprinted from Science, 96: 389)	R. R. Bensley —A. A. Knouff.

**Biological Symposia, Vol. X. Frontiers in Cytochemistry.** The Physical and Chemical Organization of the Cytoplasm. Edited by Norman L. Hoerr. vii+334 pages with illustrations and references. The Jacques Cattell Press, Lancaster, Pa. 1943. \$3.50.

### Medical Parasitology and Zoology

We have here a satisfactory textbook for students and, of most interest to me, an example of how an excellent medical school (Cornell University Medical College) has solved the problem of presenting a large and important subject to its students.

The newness of this subject to most American medical schools, and the presence of an already crowded curriculum, have frequently thwarted proper training in what is now considered an essential part of every physician's college experience. This book is especially recommended, therefore, to the attention of those educators who have this problem to solve.—*C. E. Venard.*

**Medical Parasitology and Zoology,** by Ralph Welty Nauss. 534 pp., illus., 1944. Price \$6.00. Published by Paul B. Hoeber, Inc., Medical Book Department of Harper & Bros., 49 East 33rd St., New York, N. Y.

### Dynamical Analogies

This book, though only about a year in print, has been obtained by many engineers and physicists for personal libraries, and is becoming fairly well liked.

The book, in brief, takes the mathematics and relations that have been developed so highly for electrical circuits and applies them to mechanical (rectilinear and rotational) circuits and acoustical circuits for which the mathematics has not been developed as highly. The mechanical and acoustical circuits are transformed into corresponding electrical circuits for which the solutions are quite well known.

The material is written in a well-organized, simple style: the circuit elements and units are first well defined and then used in simple, and then in successively more complicated, combinations. The clarity and consistency of the diagrams used to illustrate these combinations is commendable.

After development of relations for various combinations of the elements, the author applies the material to corrective network, wave filters, and various electromechanical and acoustical driving and generating systems. These treatments are of great practical interest.

The transient relations that are used in corresponding analogies are obtained by operational calculus methods, and the mathematics is somewhat too abbreviated here. The addition of a general set of operational calculus formulas would be of real value. The Reciprocity, Thevenin's and Superposition Theorems are also applied to mechanical and acoustical systems.

There is, in addition to practical applications scattered throughout the chapters on driving and generating systems, a chapter on applications at end of book—but while the list of applications is inclusive enough, the treatments of the applications are too brief.

The book, though perhaps somewhat more abbreviated than necessary, is a very valuable and interesting one.—*Kenneth P. Yates.*

**Dynamical Analogies**, by H. F. Olson. 196 pp. D. Van Nostrand, 1943.

### Heat and Thermodynamics

A new and considerably improved edition of Professor Zemansky's book dealing with thermodynamics for students preparing for career in physics or engineering. The second edition is nearly the same length as the earlier edition, but the contents have been rewritten in a great many places. New sections have been added and sections deleted. A considerable amount of illustrative material and graphs have been inserted at various points. The problem lists at the chapter-ends have been revised and improved. This second edition can be recommended for use with advanced undergraduates or beginning graduate students.—*Harold H. Nielsen.*

**Heat and Thermodynamics**, by Mark W. Zamansky, Ph.D. McGraw-Hill Book Company, New York. \$4.00.