

BOOK NOTICES

Entomological History

From his long and varied experience with entomology and entomologists Dr. Osborn has prepared and published this interesting account of the development of the science and of the persons responsible for its growth. He has dipped deep into his memories and withdrawn much of a personal nature that enlivens and enriches the book. Federal and state services, experiment stations, college departments, entomological societies and publications all form part of the historical pageant. Accounts of the outstanding insect collections are presented. The book is further personalized by the inclusion of a long series of short biographies of present-day entomologists, and an appendix of about 250 photographs.—L. H. S.

Fragments of Entomological History, by Herbert Osborn. vii+394 pp. Columbus, Ohio, published privately by the author, 1937.

The Life of Genius

Blaise Pascal receives honorable remembrance by all those who treat the history of science, for his arithmetical triangle, his principle of physics, and for many other contributions to mathematics and physics. In this new biography, however, the true proportions of his genius are disclosed in the description of his remarkable achievements in many other fields of endeavor. The exposition in both chronological and topical, this feature being permitted by a rather distinct metamorphosis in Pascal's life and in his thought. The author therefore describes, in turn, the Prodigy, the Inventor, the Convert, the Physicist, the Mathematician, the Man of the World, the Lover, the Mystic, the Penitent, the Polemist, the Philosopher, the Saint, and, in summary, the Man. Pascal, in his passionate search for the ultimate "certitude" in nature, turns radically from one intellectual sphere to the next, displaying his genius at each turn.

A large share of the book is devoted to the religious background of Pascal's period, which had great influence upon his life, even though it never completely dominated his own inductive method of logic. The book is written in a scholarly and entertaining style, and in a manner which invites much reflective thought. It is evidently the result of an exhaustive and critical study. References and controversial subjects are relegated to an appendix of notes, so as not to detract from the readability of the book.—C. W. COTTERMAN.

Pascal, The Life of Genius, by Morris Bishop. xi+398 pp. Baltimore, Williams and Wilkins Co., 1936. \$3.50.

Metabolism

Doctor Holmes presents a rather frank appraisal of what we do not know about the metabolism of the individual tissues. He surveys with simplicity and brevity the general field of biochemical research, pointing out the most salient facts as well as some of the more evident blanks in our knowledge concerning the subject. The book is quite comprehensive in scope, taking up the difficult problem of organization within the cell through a consideration of the action of individual enzymes. Such topics as the metabolism of the liver, kidney and other tissues, the concept of oxidation-reduction potential, and the chemistry of the vitamins and hormones are discussed in details so fine and yet so fundamental that they make interesting and easy reading.

This book should be of value to biologists, physiologists and others interested in the subject as a guide to the work that has been done and the work that needs to be done in biochemistry. Students of the life sciences should find it useful for gaining a quick acquaintance with, and a broad appreciation of the methods and present status of biochemical research. It is recommended as a supplementary text or as a reference for courses dealing with the activities of living tissues.

—HARRIET S. HYMAN.

The Metabolism of Living Tissues, by Eric Holmes. 235 pp. Cambridge, at the University Press; New York, The Macmillan Co., 1937. \$2.25.

Breeding

This book is without doubt the most complete and thorough volume on animal breeding which has yet appeared. Modern genetics has contributed so much to the scientific knowledge of breeding that any adequate book on this subject must of necessity rest firmly on a genetic basis. This very fact brings the breeder up against much technical detail of genetics and biometry. Lush has done a remarkable job of combining technical and practical information into a readable and workable book. Certain unavoidable statistical concepts have been used, but so clearly are they developed, and so rationally introduced into the practical discussions that the breeder should have no difficulty in appreciating their importance. Animal husbandry departments which do not incorporate this book somewhere in their curriculum may fairly be said to be behind the times.

Following a discussion of the origin and domestication of farm animals, the general principles of genetics are briefly discussed in their relation to animal breeding. Then follow several chapters on breeding plans based on selection, on relationship, and on somatic likeness. Some general topics of interest to the breeder are taken up, followed by a chapter on sex and reproduction. The book closes with a general summary. It is not always easy to combine technical and practical information in workable form, but the result in this case is highly gratifying.—L. H. S.

Animal Breeding Plans, by Jay L. Lush. viii+350 pp. Ames, Iowa, the Collegiate Press, Inc., 1937.

Modern Alchemy

This small book contains in somewhat expanded form the subject matter of the Henry Sidgwick Memorial Lecture delivered in November, 1936. There are thirteen plates and eight figures which enhance the readability of this elementary thesis on nuclear physics. The older field of natural radioactive transformations is first reviewed. The discovery of the fundamental particles (neutron, deuteron and positron) is clearly and simply presented. Special emphasis is placed upon the neutron. The methods and instruments for the production of high voltages and transmutations are briefly reviewed.

Since only the most outstanding points are touched upon, one may gain quickly from this book a very excellent perspective of the general field of nuclear physics and a glimmer of future possibilities.—M. L. POOL.

The Newer Alchemy, by Lord Rutherford. xii+67 pp. New York, the Macmillan Co., 1937. \$1.50.

Educational Psychology

This book should be welcome both because the author is an authority on racial differences in mental abilities and because he has supplemented the conventional discussion of "original nature" in educational psychology texts by including a chapter on heredity. On neither count, however, is the level set by the book as a whole maintained. The materials of the chapters on motivation, learning, thinking, and achievement are well chosen and arranged. They reflect the author's fifteen years of teaching this subject matter.

With the term "selection" used to mean biased sampling, Dr. Garth's brief presentation of racial psychology concludes that, "racial differences in intelligence . . . are due to nurture and selection, and not to racial germ plasm." Since race problems are forever vexatious to students, it is regrettable that more of an answer than this is not afforded their questions. If biological differences are admitted as between individuals, it will be difficult to see why biological selection should not have been considered a possible factor as between racial groupings. With crucial data few indeed, the student could be better helped if it were pointed out that biological difference is not synonymous with biological superiority, that, taken together, marked cultural differences plus possible biological differences do not in fact produce more than small average differences between races, and that such differences as are found are slight compared to either individual differences or group differences within a race.

Galton's laws of ancestral inheritance and of filial regression might better have been omitted, especially since the student is left to suppose that the latter

law alone gave rise to the doctrine of the stability of the gene. He is also left to think little more of Johannsen's work than that it "verifies our statement that if we select two parental organisms, however closely related, their progeny will still show variation." The treatments given meiosis and linkage are vague. As a fundamental concept, the particulate nature of inheritance deserves emphasis in such a chapter, and to this end the re-telling of the tales concerning the Jukes and the Kallikaks might well be spared.—B. PRICE.

Educational Psychology, by Thomas R. Garth. xvi+319 pp. New York, Prentice-Hall, Inc., 1937. \$2.50.

Sound

The most recent of a series of books on Sound by Professor Miller of the Case School of Applied Science, Cleveland, deals with his own researches in this field. Curiosity about the tone qualities of flutes made of different materials was the starting point of these studies, in the year 1900. In 1908 Miller devised the phonodeik, which he developed into the most faithful device for recording the wave form of sound which was available before the advent of electronic devices of the present day. Many phonodeik records are reproduced and discussed in this book, including tones of musical instruments and typical speech sounds.

By contrast, the second half of the book deals with sound waves from rifles of various sizes up to 14 inch guns. The object at first was to investigate the concussion wave from big guns as a possible cause of shell shock. Later, the facilities of the Sandy Hook Proving Ground were used in measuring the speed of sound and its variation near the guns. Results of these studies are presented for the first time in this book. Also included are photographs of bullets in flight and the accompanying sound waves, made by electric-spark photography.

This book is unusual in that it is a research report intended for a wider audience than a restricted group of specialists. Dealing with the outstanding findings of a long series of studies from a comprehensive viewpoint, without the exaggerated conciseness of a journal article, it may be read with pleasure by any one interested in sound.—HAROLD P. KNAUSS.

Sound Waves, Their Shape and Speed, by Dayton Clarence Miller. xii+164 pp. New York, The Macmillan Co., 1937. \$2.75.

The Living World

"The Living World" was written to serve as a text for a cultural course in biology, nature study, or elementary ecology. The book is divided into four parts dealing with (1) the biological aspects of living things, (2) the kinds of animals and where they live, (3) plant study, and (4) suggestions for field study.

The book is essentially zoological, approximately only 100 pages being devoted to plants. It contains much material of general interest about animals. Chapters on color, sound, defenses, and life spans of animals add much interest, and are valuable even though they are debatable topics. The ecology is elementary, but complicated by avoiding standardized descriptive terms, for which in several instances, words of doubtful meaning are substituted. The portion devoted to botany contains a section on insect galls and their causative organisms. The practical suggestions for study are so basic to nature study that this section could be more useful if enlarged. A reference list of books and periodical literature at the end of most chapters will facilitate independent inquiry by the better students. Because of this feature, the text may serve as a reference book for students interested in field studies, even though they have had previous courses in biology.

Although this book is a departure from books on Natural History written in a popular style, it is not sufficiently divorced from the content and technique of the commonplace elementary biology text written from a purely morphological point of view. Frequently the text fails to adhere to factual evidence and statements are made without support. A *priori* logic combined with the idea of purposive adaptation is a detriment to correct thinking by students. Several errors involving misstatement of fact were noted.—CARL VENARD.

The Living World, by Samuel H. Williams. xxii+704 pp. New York, The Macmillan Co., 1937. \$3.50.

Marconi

This is an accurate, interesting and most complete account of the life of Senatore Marconi, particularly during the period of the early development of wireless telegraphy in which Marconi played so important a part. The book is completely non-technical in nature, amounting to a detailed history of the most dramatic experiments of Marconi and the development of a practical system of what he chose to call wireless telegraphy, but now known generally as radio telegraphy. Quotations from the press (the author being Radio Editor of the *New York Times*) form a considerable part of the text and at times are a little tiresome, but lend a definite degree of completeness and authenticity. The author, being a former ship radio operator, dramatizes the first use of wireless telegraphy in saving life on shipboard in a vivid manner. Published shortly before Marconi's death, this book gives a historical account of the development of radio communication that clearly establishes Marconi's inventive genius and shows him in the role of practical inventor, business man, and scientist.—R. C. HIGGY.

Marconi: The Man and His Wireless, by Orin E. Dunlap, Jr. New York, The Macmillan Co., 1937. \$3.50.

Uncertainties

Which of us has not at some time speculated about the beginning and the end of time, the boundaries of space, the possibility of an absolute post of observation and reference, simultaneity of events at different points, ultimate causality, freedom of thought and action? Here is a volume devoted to just such speculation, carefully thought out and thoroughly discussed. Not easy reading, it nevertheless holds the attention because it is so often a mirror of one's own unspoken thoughts. The warp of the discussion is the constantly changing scientific outlook, improving essentially as mathematical technics improve; the woof is man's difficulty in detaching himself from the cosmos which he is trying to describe and interpret. If one's questions are not all answered by the book, at least new lines of speculation will have been opened up.—L. H. S.

Aspects of Science, by Tobias Danzig. xi+285 pp. New York, The Macmillan Co., 1937. \$3.00.

The Physiological Basis of Medical Practice

Physiology has long been known as the hand-maiden of medicine. The physiologist who has the responsibility of instructing medical students may rightly be expected to point out to his students the clinical applications of his science and to emphasize especially those aspects of the subject which are of value in the diagnosis and treatment of pathological conditions. Professors Best and Taylor, the eminent physiologists of the University of Toronto, have kept these facts constantly in mind in the preparation of their new book which has met with instantaneous and signal success. In spite of the fact that a generous proportion of the book is devoted to a consideration of the practical aspects and clinical applications of the subject, fundamental and classical physiology has by no means been neglected. Indeed the outstanding virtue of the book is its comprehensiveness. In it one can find the most recent developments in the pure science of physiology as well as a wealth of material which relates these developments to the practice of medicine. The book is written in a lucid and interesting style and its contents presented in logical sequence. It is divided into eight sections as follows: (1) the blood and lymph, (2) the circulation, (3) respiration, (4) the excretion of urine, (5) digestion, (6) metabolism and nutrition, (7) the ductless glands, and (8) the nervous system. A dogmatic attitude on controversial subjects has been studiously avoided. In such cases the important evidence on both sides is presented from an unbiased point of view. The book is much more than a test-book of medical physiology, it is an outstanding reference work for medical practitioners and for biologists in general.—F. A. HITCHCOCK.

The Physiological Basis of Medical Practice, by Charles Herbert Best and Norman Burke Taylor. xxiii+1684 pp. Baltimore, William Wood and Company, 1937. \$10.00.