

BOOK NOTICES

Biology Afield

According to the opening paragraph in the preface, "This guide is designed to direct the student in the study of living organisms. It was written to provide a working method for Nature Study, Field Biology, and General Biology. The program of studies outlined here is obviously for Natural History Courses. It is the opinion of the writer that the cultural courses in Biology should be of this type, instead of the usual dissection courses which are primarily pre-professional in character."

This pocket-sized guide of 130 pages, written to accompany the author's textbook, entitled "The Living World" (reviewed in the *Ohio Jour. Sci.*, v. 37, p. 313), consists of 65 exercises of which 44 are on animals, 18 on plants, and one each on use of the microscope, plant and animal relationships, and directions for field collection, the latter of which consists almost entirely of a key to the Phyla and Classes of animals. With the exception of a chapter on the fauna of the seashore, the book deals with land and freshwater plants and animals. A three-page chart on where to collect and how to care for animals is very useful. Microscopic plants and animals are included (except for occasional statements the Protozoa were not included in "The Living World"); the nematodes and mammals are omitted. Animal ecology is represented by a number of chapters on surveys, environmental factors, and animal reactions. Efforts to illustrate interrelationships of animals are few. The section on botany covers the plant kingdom briefly, concerning itself mainly with morphology and classification.

The book contains many excellent suggestions and clearly delineates objectives. Directions concerning pursuit of the above are short. Accurate and integrated observation of living things in the field with precise and conservative interpretation, in this reviewer's opinion, is not sufficiently stressed. This laboratory and field guide may be used with distinct advantage over manuals consisting only of directions to laboratory exercises of dissections and drawings.—*C. Venard.*

A Laboratory and Field Guide to Biology, by Samuel H. Williams. xxv+130 pp. New York, the Macmillan Co., 1938. \$1.25.

Life and Its Origin

After many years of considering the question of the origin of life this author presents a lucid and carefully reasoned summary of the inferences he has drawn from investigations made by astronomers, technicologists, geologists, bio-chemists and others working in related fields. In the first three chapters the ideas of the spontaneous generation of living organisms "all at once," of the eternity of life, and of the dissemination of life by spores carried in cosmic dust are critically reviewed and rejected. The next three chapters are devoted to the evidence of a primary formation of organic substances on our planet, and of the further evolution of these substances previous to the origin of living systems. It is from these three chapters that the biologist will obtain the most useful data. A few of the conclusions reached by the author are indicated.

During the cooling of the earth after its separation from the sun as a molten mass of vapor, carbon and nitrogen first appeared upon its surface in a reduced state as metal carbides, metal nitrides and cyanamides which upon contact with the superheated aqueous vapor of the earth's atmosphere became the source of hydrocarbons and ammonia. Through oxidation-reduction reactions with the hydrogen and hydroxyl components of water these hydrocarbons and ammonia became the forerunners of a great variety of organic derivatives (alcohols, aldehydes, ketones, organic acids, amides, amines, etc.). Oxygen was retained at the earth's surface in combination with metals and in the atmosphere in com-

bination with hydrogen as superheated aqueous vapor. Molecular oxygen and carbon dioxide in our present-day atmosphere were formed secondarily and at a much later epoch, as a result of the activity of living organisms.

From the time when the primary oceans came into being, the environment in which organic compounds existed resembled our own so closely, that further transformations and evolution of organic compounds both previous to and after the origin of living systems may be safely surmised on the basis of three principal reaction types, "First, *condensation*, i. e., the lengthening of the carbon chain, and the reverse process of splitting the chains between two adjacent carbon atoms; second, *polymerization*, i. e., the union between two organic molecules through an atom of oxygen or nitrogen, and *hydrolysis*, the reverse process of splitting up such unions; and third, the process of *oxidation* with its invariable accompaniment of reduction." The last sentence is quoted directly because of the peculiar use of the terms condensation and polymerization.

Some of these organic compounds were colloidal in nature. When mixed together they may have become partially dehydrated and formed droplets of semi-liquid colloidal gels, or coazervates, which became separated from the solvent medium by a more or less distinct membrane. Such coazervates of organic matter in the archaic oceans became isolated centers of further evolution. Each coazervate droplet because of differences in composition and internal organization had a certain degree of individuality. Its further fate was now determined not only by the conditions of the external medium but also by its own internal physico-chemical structure. The entrance of materials from the external medium might result in destruction of the coazervate droplet or in its growth and evolution through further transformation in composition and internal organization. Coordination of internal processes would also be necessary to its continued existence. This coordination became increasingly complex with the evolution of dependent systems of enzymes. Given a sufficiently long period of time the origins of living systems from such coazervates merely represent definite mileposts along this historic road of the evolution of matter. The further evolution of living organisms is fundamentally nothing more than the addition of some links in an endless chain of transformations of matter. The first organisms were dependent upon the already formed organic matter as a source of food. Pigmentation and the manufacture of food by pigmented plants radically modified all the hitherto existing relationships and made possible the continued existence of organisms upon the earth.

The chief value of the book lies in the assemblage of a wealth of related experimental data within a single volume and the brilliant thought provoking way in which the author has organized these data and inferences. A bibliography limited largely to papers from Continental Europe is appended.—*H. C. Sampson.*

The Origin of Life, by A. I. Oparin, translated with annotations by Sergius Morgulis. New York, the Macmillan Co., 1938. \$2.75.

Troubled Minds

This book is primarily descriptive. Well selected case reports give vivid pictures of a very wide range of mental deviates: the psychopathic, the psychoneurotic, and all the borderline cases of mental aberration found outside of mental hospitals, as well as those that can be classed definitely as psychotic. To present these descriptions "in simple terms and to state some original theories concerning the nature of these disorders" is the author's avowed purpose. For him, nervous and mental illnesses are "quantitative rather than qualitative disturbances; they are intrinsic disorders rather than extrinsic disorders; they are pathological exaggerations of the patient's native propensities." These propensities are fundamentally physiological. The basis for the psychoneuroses, and to a considerable degree for other disorders is found in the positive and negative physiological reactions of the organism. We react *to* a stimulus or *from* a stimulus. "A child runs *from* a barking dog *to* his mother." These "*from-reactions*" and "*to-reactions*" are fundamental for the psychopath as for the normal person.

Support of this physiological theory lies in illustration rather than argument. Nor are the arguments of those holding other theories answered. The theories of

different schools of psychoanalysis, for example, are not discussed. Their extensive vocabulary with its theoretical implications is practically ignored. "Psychocatharsis" and "psycho-genesis" appear in the glossary but not in the index. The long procession of patients lined up for clinical evidence have few "complexes" or parent "fixations." The author's physiological theory does not exclude, however, the usual distinctions between organic and functional psychopathology.

It is generally admitted that we should develop a program of public mental hygiene, as we have done in the field of public health. People must learn to look at mental disorders as objectively as they look at physical injury or illness without any feeling that there is any disgrace or shame involved. This book should be helpful in that direction.

The last chapter discusses the role of the patient in his own therapy. Why not one chapter at least on the responsibility of the parent, the teacher, and the physician in general practice? Some explicit discussion along this line would not only have indicated the constructive thinking necessary for a forward-looking program of mental hygiene but would have prevented the mistaken interpretation of the author's meaning which will lead some readers to find his theories fatalistic. "An individual's nervous disorders are related to his natural make-up; they do not emanate from external sources." "Whatever may be one's personal ambitions, he must live within his biological limitations." Yes, the patient is the patient, to be sure. But did he not have a father and a mother, go to school, and live in a social order? Perhaps he married, had friends, and worked for some employer. Can the problem be only that of an individual organism with a certain "make-up"?

—F. N. Maxfield.

The Troubled Mind, by C. S. Bleumel. xi+520 pp. Baltimore, The Williams and Wilkins Co., 1938. \$3.50.

Vitamins Painlessly Administered

In 1935 Jennie Gregory published an interesting compilation of charts and diagrams summarizing the elementary facts in the field of endocrinology, which she called *The A B C of the Endocrines*. That little volume seems to have met with considerable success and now Miss Gregory has applied the same method to the field of the vitamins. In an attractively gotten up volume of less than one hundred pages she tells graphically and without the use of any continuous text, the story of the development of nutritional research and vitamin theory and then proceeds to give a surprisingly complete account of the occurrence, nature and physiological functions of the various vitamins. There is also included a graphic exposition of experimental methods and general vitamin relationships. The nature of the method employed prevents the book from being more than an outline of the subject, but an excellent bibliography is included from which those who are interested may obtain more complete information. The value of the book is also enhanced by the glossary in which more than one hundred fifty terms are defined.—Fred A. Hitchcock.

The A B C of Vitamins, by Jennie Gregory. xii+93 pp. Baltimore, The Williams and Wilkins Company, 1938. \$3.00.

Physical Principles

In the revision of this excellent textbook of general physics, Dr. Smith has strengthened its many fundamental and outstanding features and has added important material in modern physics and an interesting chapter on nuclear physics.

The book is widely used as a general text in the subject for class room work, but it merits attention by workers in allied sciences who may desire (1) to review important principles of physics; (2) to make concrete application of physics to the solution of simple fundamental problems requiring definite answers in specified units (note the large number of solved problems in all fundamental phases of elementary physics); (3) to make a fair beginning in the application of physics to the allied biological fields (note the numerous applications to related phenomena in biology, physiology and agriculture); (4) to review and clarify fundamental

concepts in the field of light and radiant energy (this phase of physics is particularly well done and the importance of it in allied fields is well recognized by the author); (5) to become better informed concerning the recent advances in modern and nuclear physics (most of the new important concepts of matter, radiation, and atomic structure are treated in a not too technical way in the chapters on spectra and nuclear physics).—*C. W. Jarvis.*

Elements of Physics, by Alpheus W. Smith, 4th edition. xix+790 pp. New York, The McGraw Hill Co., 1938. \$3.75.

Avian Ecology

In summing up a portion of the results of an eight-year study of the Song Sparrow made at Columbus, the author of this volume has produced a work which will prove quite indispensable to those interested in the life history and ecology of birds. It would be difficult or impossible to name any other single source which contains a comparable amount of information concerning a North American bird. The salient facts in the life history of the Song Sparrow are reviewed briefly but the larger part of the work is devoted to a study of a population rather than of the individual bird. Among the outstanding chapters are those which treat of the migratory status, survival and length of life, relations with the Cowbird, and effects of temperature on migration and on the breeding cycle.

The work is admirably organized. The author presents a wealth of original data clearly and concisely, with frequent but judicious use of tables and diagrams in the text. Each chapter is summarized separately. The interpretation of the data owes much of its authority to the author's command of pertinent literature. The techniques of the study are explained in an appendix which should be of especial value to the student. There is a comprehensive bibliography and an adequate index.

This book may be safely recommended not only to the student of birds but also to those interested in the broader fields of ecology and animal behavior. Furthermore it furnishes an outstanding example of a worth-while scientific study accomplished without recourse to elaborate equipment and without subsidy.

—*C. F. Walker.*

Studies in the Life History of the Song Sparrow. 1. A Population Study of the Song Sparrow, by Margaret M. Nice. Transactions of the Linnean Society of New York, Vol. IV, April, 1937, vi+247 pp. \$1.50.

Log of a Bird-banding Station

This book is a record of eight years of bird-banding (1923 to 1930) by the author and her husband on their 30-acre suburban estate, Tanager Hill, on the shores of Lake Minnetonka about 15 miles west of Minneapolis. Most of the book (pp. 7-208) consists of the 8-year banding record, written in the form of a diary of the experiences operating the station; the remainder of the book is a brief introduction and summary.

The book is based on a great deal of detailed data, the record of banding 18,024 birds of 97 species, with 21,799 repeats and 626 returns. These data seem rather inadequately summarized. The summary consists of two sections, "Analysis of Return and Recovery Records," and "Appendix (Technical Data)." The first is a very interesting but brief summary of the records of 26 of the 97 species, and the second contains tables of the station returns and recoveries. These two sections are poorly edited, as there are many discrepancies in the figures given in the two sections, and several typographical errors. Such general information of interest to ornithologists and bird banders as the types of traps used, bait, location of traps, success of different traps, effect of predators, and the like, are mentioned through the log, but are not included in the summary.

The book contains a table of contents, but no index. There are 19 illustrations, including 17 photographs (mostly from the U. S. Biological Survey), 1 graph (more

would have added to the value of the book), and 1 map of Tanager Hill. Three of the photographs show traps, a drop trap, house trap, and sparrow trap.

This book is "published for the enjoyment and information of ornithologists, bird banders and all bird lovers," and to a considerable extent fulfills these aims. Though its style is that of a diary, it holds the reader's interest very well, as the descriptions of Tanager Hill and the experiences of bird-banding are vivid and fascinating. The ornithologist and bird bander will find much of value in this book. As the author observes, Tanager Hill is only one of thousands of rural homes that offer opportunities for bird-banding and fascinating adventures with birds, and there seems to be no reason why many other people might not have experiences like those described in this book.—*D. J. Borror.*

The Log of Tanager Hill, by Marie Andrews Commons. xvii+244 pp. Baltimore, The Williams and Wilkins Co., 1938. \$2.50.

Zoology

With the increase in emphasis upon science in everyday living has come a demand for courses in science which are not so technical: courses designed for the layman in the field *not* specifically for the majors in a given area. Dr. Wieman of the University of Cincinnati has made a real contribution towards the fulfillment of this demand in the third edition of the textbook "General Zoology." The book is comprehensive but not exhaustive. The relationship of Zoology to everyday living is well handled. Body structures are considered in relation to their function, not as separate morphological phenomena. Familiar animals serve as examples but constant reference is made to the human body. Animals are considered in relation to their environment with some mention (though not too extensive) of the interaction of one upon the other. The author says a great deal in a short space. Although concentrated, the careful average student should be able to handle the matter readily. Only ninety pages are devoted to a discussion of the Animal Kingdom, which many may consider too few, but characteristics and examples of the main groups are given and tests have shown that the details of morphology are not long remembered by the general student in any event.—*Paul E. Schaefer.*

General Zoology, by H. L. Wieman. x+497 pp. New York, McGraw-Hill Book Company, Inc., 1938. \$3.50.

Five Sisters

An account of the most popular quintet in the world, told in a simple and interesting manner, this book of 205 pages is amply illustrated with photographs of the quintts taken at different ages and engaging in various activities. Comprehensive descriptions of the living arrangements, the evidences of identity of the quintts, and their individual physical, intellectual and personality traits are rendered. Diagrams and detailed plans of the Dafoe hospital and the play grounds are shown, and the daily routines are described in detail.

Perhaps pedagogues are more prone than others, consciously or unconsciously, to allow their own viewpoints to influence what should be unbiased accounts. At any rate, there seems to be a tendency for the author to go to undue lengths in a rather defensive explanation of the various mental test scores of the quintts, and on the other hand to draw extensive conclusions from superficial tests of personality. A curious inconsistency appears in Chapter 4; on page 49, the statement, "but even though twins emerge from a single egg, the division of the cells is so complex that there is still a chance that one part may have a few hereditary elements different from the other," and on page 64, the statement, "it must be considered that they have a common heredity, that structurally they are alike."

The *Five Sisters* is a book which should be in the possession of those interested in the Dionne quintuplets, and is a valuable reference for students of the nature-nurture problem.—*D. C. Rife.*

The Five Sisters, by Wm. E. Blatz. 205 pp. New York, William Morrow & Co., 1938. \$2.50.

Our Amazing Earth

Devoid of jargon, yet safely accurate, is "Our Amazing Earth," the latest addition among recent books placing emphasis upon a popular treatment of the science of geology and related subjects. The book is welcomed by those teachers who have recently been surveying the problem and need for broader and more general public education in the science of the planet of man. It should be eagerly grasped by the average layman.

The author's logical arrangement starts with a portrayal of the earth's astronomical relations, followed by speculation as to the earth's origin and age. Next are treated the materials of the earth's crust and their arrangement, and then a discussion of the natural agents and processes which operate upon the earth's surface in the development of our ever-changing landscape. Finally, for those readers who are inquisitive as to the earth's long past, are a few short chapters giving glimpses of geologic history.

The author and publishers are to be commended for their many exceptional half-tone illustrations and well chosen diagrams.—*Paris B. Stockdale.*

Our Amazing Earth, by Carroll Lane Fenton. xvii+346 pp. New York, Doubleday, Doran & Company, Inc., 1938. \$4.50.

Laboratory Arts

This is the first book in English attempting to cover such a wide range of subjects that has yet come to this reviewer's attention. While there have been works each on one of the separate subjects covered in the many chapters of "Procedures in Experimental Physics," no one has attempted to put into one volume the wealth of material that the present author uses.

The usefulness of the techniques described is not limited to the physical laboratory, and every scientific worker should be more or less familiar with them or know where to find them described. To be sure no book knowledge can be a substitute for skill in manipulation, but the painstaking descriptions of several of the processes will serve as starting points for anyone wishing to become more familiar with them.

Most of the modern physical methods and techniques developed in the past few years are adequately described. The construction and use of Geiger-Muller counters, of vacuum thermopiles, of quartz fibres are all discussed, while the first chapter is a course in elementary glass-blowing. Photographic methods and testing of optical systems also receive attention, as well as the construction of special types of burners and furnaces.

One remarkable feature of the book is the entire absence of photographs. All illustrations are pen-and-ink drawings by an accomplished artist and some of them are so carefully made that they could serve as working drawings. The only adverse criticism that could be made is with respect to the graphs, where plus signs are used to indicate crossing positions of abscissa and ordinate lines. To the physicist this mark would indicate an experimental point, and it is disconcerting at first to see curves passing among a group of them without getting near any of them.

—*J. B. Green.*

Procedures in Experimental Physics, by Strong. x+642 pp. New York, Prentice-Hall, 1938. \$5.00.

Political Arithmetic

The distinguished professor of social biology at the University of London, Dr. Lancelot Hogben, has recently accepted a post at Aberdeen. The present volume appears to be in the nature of a summary of the work carried on in social biology, particularly in the field of population enquiries, during his tenure at London. Some of the chapters are reprinted from journals; about half of the material is presented for the first time. Following an introduction by Hogben, chapters on various aspects of fertility are offered by Enid Charles, Kuczynski, Glass and Moshinsky. The second part of the volume, again following an introduction by

Hogben, contains chapters on various aspects of education and opportunity in the British Empire. The final chapter is a study of the distribution of the blood groups and its bearing on the concept of race. New contributors in this part of the volume are J. Gray and David Morgan. The book is valuable not so much for the factual material it contains as for the methods it demonstrates for attacking problems of social biology. There are many graphs and tables, and the book is beautifully bound.—*L. H. S.*

Political Arithmetic, edited by Lancelot Hogben. 531 pp. New York, The Macmillan Co., 1938. \$9.00.

Practical Bacteriology

A useful addition to the library of any bacteriologist is this recently revised handbook which bridges the gap between the laboratory manual and the text book, a gap the laboratory instructor usually seeks to fill by discussion. The book is divided into three sections: Part I is general and introductory, Part II deals with bacteriological technique, and Part III with pathogenic micro-organisms and with bacteriological diagnosis. There is a particularly excellent discussion of the microscope. Although the newer system of classification, taken from Bergey's *Manual of Determinative Bacteriology*, is given in the first part of the book, the authors, unfortunately, use the older classification throughout their discussions. This may lead to some confusion. Bacteriologists will find the book an excellent ready reference and a valuable supplement to the general texts.—*J. M. Birkeland.*

Practical Bacteriology, by J. T. Mackie and J. E. McCartney. 5th ed., xi+586 pp. Baltimore, William Wood and Co., 1938. \$4.00.

Bacteriology

This pocket-size volume of less than three hundred pages is one of a series of Students Aids "specially designed to assist students in grouping and committing to memory the subjects upon which they are to be examined, yet offering the General Practitioner an invaluable means of brushing up." The late W. Partridge and H. W. Scott-Wilson, who is responsible for the current revision, have presented clearly, concisely, and accurately factual material covering the whole field of bacteriology. They have accompanied it with sufficient description and explanation so that the book is a ready and usable reference to the student in bacteriology and to workers in fields allied to bacteriology.—*J. M. Birkeland.*

Aids to Bacteriology, by W. Partridge and H. W. Scott-Wilson. vii+300 pp. Baltimore, William Wood & Co., 1938. \$1.50.

Science for Young People

The intrinsic interest of scientific developments and their applications is delightfully represented in this little book. Physics, chemistry, and biology are represented in the thirty brief chapters, each of which deals simply and intimately with a single topic such as "How chemical curiosities aid industry," "Wealth from the sea," "Farming on water," "Teaching wood new tricks," "Raincoats from test tubes," "Human electricity," "Harnessing time," and "Our enemy, noise." Written for young people, this book will prove thoroughly enjoyable to anyone who is interested in science. The author's information is accurate, and his style is most engaging. Large type and well chosen illustrations add to the attractiveness of the book.—*Harold Knauss.*

The Magic Wand of Science, by Eugene W. Nelson. 213 pages. New York, E. P. Dutton and Company, 1938. \$2.00.