

BOOK NOTICES

A Revision of a Standard Text in Astronomy

Since 1927 when the second volume of "Astronomy" by Russell, Dugan and Stewart was written, this work has been the standard text and reference work on astrophysics and stellar astronomy. Since that time many new developments have occurred, particularly in astrophysics. It is interesting and rather astonishing to note that these new developments require in the main that the volume need be expanded rather than revised. This may be interpreted in either of two ways:

Either the authors have not found it expedient to revise the volume in its entirety or their original choice of material was so well made that only additions were necessary to bring the volume up to date. The reviewer has examined the book carefully and finds that a combination of the two interpretations is probably the correct one. A complete revision would have involved an amount of labor that would not have been justified by the additional gain in coherence over what has been achieved by the simple addition of new material. This must be construed as a tribute to the original judgment of the authors.

The new volume as it now stands is subject to the same criticisms that could be made of the old volume. The greatest of these concerns the pictorial material on which so much expense was saved by the printers that it is of little value in many cases. Typical of this is the poor quality of the reproductions of the many spectrograms most of which are so poor that they are of little help to the reader.—*C. E. Hesthal.*

Astronomy Vol. II, Astrophysics and Stellar Astronomy, by Russell, Dugan and Stewart. xii+488+xxx (appendix) pp. Boston, Ginn and Co. 1939.

Plane Sets of Points

This is an excellent little book in more ways than one. Topology is one of the most important fields in modern mathematics, and some of the most outstanding achievements of the mathematical research work of this century belong to the field of Topology. The book under review serves, in the first place, the important purpose of providing a picture of modern Topology in a manner that should appeal to the non-specialist. By restricting the discussion to the study of the plane, technical difficulties are almost entirely eliminated and the author can concentrate upon the methods and ideas underlying the theory. The discussion is strictly scientific, but extremely clear and careful, and should be within the reach of anybody who took some graduate work in mathematics. Still, there is very little in the book that is trivial. In fact, most of it represents the best thought of modern mathematics, both in results and in methods. The book also serves, in the second place, the equally important purpose of providing a textbook for those professional mathematicians who do not specialize in Topology, but have to use topological results and methods in their work, either in teaching or in research. The theory of functions of a complex variable is the field which the author of the book had primarily in mind in selecting his material, but the reviewer, judging by his own experience, feels that the book should be extremely valuable for all those who are engaged in research involving double integrals. The typography of the book is excellent.—*Tibor Rado.*

Elements of the Topology of Plane Sets of Points, by N. H. A. Newman. viii+221 pp. Cambridge, at the University Press; New York, the Macmillan Co. 1939. \$3.50.

Parasites

The author has written a lively and whimsical account of the protozoa and of his journeys while studying them. When prose fails he turns to poetry, some of which is quite clever. The illustrations are of two kinds: some are standard drawings, diagrams, or photographs, others appear to have been done under the influence of James Thurber. Of these latter, some are excellent, others rather pointless.

Although it is difficult to predict just how much actual parasitology the average reader will learn from this book he will certainly find it both interesting and entertaining.—*J. M. Birkeland.*

Big Fleas Have Little Fleas, or, Who's Who Among the Protozoa, by Robert Hegner. 285 pp. Baltimore, The Williams & Wilkins Co. 1939. \$3.00.

Social Life of Animals

This subject is ably and very interestingly discussed by one of the leading authorities in the field of animal social life and animal behavior. For some thirty years Dr. Allee has experimented in this field. After an interesting introductory discussion of the history and the development of natural history and many observations made by early workers the author traces the development of co-operation among animal types and the effects of overcrowding. From this is developed the idea of animal aggregations and the effect of mixed populations, the behavior of groups of animals and their effects upon each other especially as regards such phenomena as the rate of learning. The author discusses group organization among animals in general and draws some human implications illustrated by international attitudes and animal reactions of human beings. Finally social transitions are discussed and the author attempts to answer the question, "When does an animal become truly social?" The entire treatise is interesting reading and illustrations are drawn largely from experiments of the author, his students and co-workers.—*D. M. DeLong.*

The Social Life of Animals, by W. C. Allee. 293 pp. New York, W. W. Norton & Company Inc. 1938. \$3.00.

The World of Insects

This volume is written in popular style, is practically non-technical in use of terminology, and covers the "world of insects" in an effective manner for the layman. Because of its popular nature it should be an excellent text or supplementary reading for high school biology courses.

The contents by chapters are as follows: Introduction, Insect Structures, How Insects Grow Up, the Growing Up of a Swallow-tail Butterfly, Insect Foods and Feeding Habits, Insect Food-Getting Devices, How Insects Reproduce, How Insects Get Air, How Insects Move, How Insects Are Protected, Insect Voices, Insect Fitness, Insect Orders, Social Life Among the Insects, The Value of Insects, Injurious Insects and Their Control, Where to Look for Insects, Rearing Insects, How to Collect and Preserve Insects.

One of the outstanding features of the book is the excellence of the many photographs and drawings. The striking black and white pen and ink drawings and the greatly enlarged photographs, the great majority of which are original, catch the eye of the reader readily.

A selected list of references is given at the end of the book, arranged according to the fields to which they apply.

This fascinating book is printed and bound in the usual high quality of McGraw-Hill Books.—*R. H. D.*

The World of Insects, by Carl D. Duncan and Gayle Pickwell. 409 pp. 194 Figures. New York, the McGraw Hill Book Company. 1939. \$3.50.

Cosmic Rays

This small book, written in a very lucid style, is based upon the revision of three semi-popular lectures delivered at the University of Virginia and Trinity College. Lecture I treats with the discovery and general significance of cosmic rays. The early works of Kolhörster are pointed out. Millikan's answer to the question, "What are cosmic rays good for?" expresses a very worthy point of view. Lecture II treats with the superpower particles which make up the penetrating cosmic rays. Many cloud chamber pictures show the existence of positrons and particle showers. A very excellent section on the evidences for the new mesotron particle, about 150 times as heavy as the electron, is given toward the later part of this lecture. Lecture III treats with the relationship of the earth's magnetic field to the cosmic ray energies and their terrestrial distribution. The latitude effect in cosmic rays is

summarized in print and in graphs. The book closes with speculations as to the place and mode of the origin of the cosmic rays. Forty-two figures help to make this a very readable book. It is highly recommended to any one who wishes the large field of cosmic rays boiled down to a very digestible form within a reading time of a few hours.—*M. L. Pool.*

Cosmic Rays, by R. A. Millikan, 134 pp. New York, The Macmillan Co. 1939. \$2.50.

Science and Society

In a period when the social importance of all our institutions is being challenged, it is not surprising to find that science has been minutely examined. This volume is an analysis of what science does for the people of the world and a prediction of what it could do if reorganized according to one author's plans. The historical aspects are authoritatively dealt with. Science has always been an outgrowth of necessity: it is not a luxury. Pure science, which is what the layman so often thinks of, originated in the early part of the 19th century. Although science has developed because of the practical aspects, its financing has been extremely indefinite.

Scientific organizations from the first one, Accademia de Lincei, founded in Rome (1601) to the American Association of Scientific Workers are considered in detail. The scientist and particularly his welfare, and attempts to better highly unsatisfactory conditions in employment through organization, are thoroughly discussed. One sees the contributions, past and present, of different nations contrasted and the development and utilization of science in these nations influenced by political ideologies.

The faults of industrial, governmental, and scholastic institutions, all of which support and direct research, are abundantly presented and a plan of reorganization is offered. This section has been read with very great care and this reviewer is bewildered over the fact that the features in administration, so severely condemned in old systems, remain in the scheme of reorganization. Although the section on administrative difficulties appears abortive, there are many splendid contributions on other topics. Some major problems considered are future expansion, the training of scientists which involves reorganization of existing curricula, employment at adequate salaries, the future nature of the different sciences, scientific communication, and the finance of science. Communication, for instance, is essential and involves travel, numerous languages, over 33,000 periodicals, and thousands of monographs each year. This phase of the scientists' life lacks organization at present.

This book contains sections that are debatable and much bias of opinion is evident. A tremendous amount of data is offered and the social involvements are admirably presented. The author has written for the inquiring minds of all scientists, and people in other fields of activity interested in science. The content of this book demand attention as the issues involved are real ones.—*Carl E. Venard.*

The Social Function of Science, by J. D. Bernal. 482 pp. New York, the Macmillan Co. 1939. \$3.50.

Physiological and Pathological Chemistry

In preparing a text book of chemistry for nurses, the author has kept in mind the fact that while some schools of nursing offer a so-called long course in chemistry consisting of ninety clock hours, there are many other schools in which only thirty to forty hours are allotted to the teaching of chemistry. He has therefore attempted to eliminate all unimportant and unessential details in order to make the material actually presented as clearly as possible to the student nurse. However, the graduate nurse who frequently has to serve as instructor in chemistry as well as in other subjects will also find the book useful, as well arranged lists of study questions have been included at the end of each chapter.

The book is divided in three parts. Part I, designated as an introduction to chemical science, discusses selected topics in a clear and readable style which the student nurse ought to be able to follow without too much difficulty. Weighing and measuring, chemical substances, elements, compounds, atoms, molecules, symbols, formulas, chemical equation, valence, oxygen, energy transformations, water, types of solutions, and some of their properties, emulsions, osmosis, colloidal

systems, acids, bases, salts, ionization, pH notation, buffers, oxidation-reduction reactions and finally a chapter of introductory organic chemistry are among the subjects included in Part I. pH notation is the only topic presented in such a way that additional aid beyond the text book is required. Since the author has presented most of his material in such a clear fashion, it seems regrettable that a few pages devoted to the chemistry of hydrogen, the halogens, nitrogen and ammonia, and carbon and carbon dioxide could not have been included.

Part II, entitled *Physiological and Pathological Chemistry*, deals with the nature of enzymes, the chemistry and metabolism of lipids, carbohydrates, proteins, digestion, inorganic metabolism, the urine, hormones, vitamins and an introduction to nutrition and dietetics, including the types of diets prescribed in certain illnesses. The order or presentation of some of the topics is the only reason for unfavorable criticism of this section of the book. Since food must be digested and absorbed before the reactions described in the chapters devoted to metabolism can take place, it would seem a more logical arrangement to discuss digestion and absorption before metabolism. Furthermore, since the author has recommended the use of only part of his text book for short courses in chemistry for nurses, the reviewer believes that a student nurse could make more practical use of her information if she were to study digestion and absorption than if she had a hazy idea about intermediate metabolism. (Digestion follows immediately after the chapters recommended for a short course).

Part III consists of a series of laboratory exercises covering the material discussed in Parts I and II, while the appendix contains useful directions for removing stains from clothing and bedding.

Although there are numerous points throughout the text to which one may take exception, the reviewer feels that the book makes a distinct contribution to the teaching of nurses and is a decided advance over other chemistry texts written especially for nurses.—*Helen L. Wikoff*

An Introduction to Physiological and Pathological Chemistry, by L. Earle Arnow, 555 pp., St. Louis, The Mosby Co. 1939. \$3.50.

Ecology and Society

The author of "Deserts on the March" and "This is Our World" has prepared in this remarkable little book a concise yet broad overview of the interrelations of living things. The work of the botanist, zoologist and ecologist is often specialized, and its broader implications are seldom recognized by society; often, in fact, are not recognized by the workers themselves. Now and then a biologist not only glimpses the vast horizons of ecology, but is capable of translating the deeper and all-pervading theme into the practical language of commerce, business, health, and community existence. Such a man is Paul Sears, and we tender him deserved praise for setting forth so clearly the social functions of ecology.—*L. H. S.*

Life and Environment, by Paul B. Sears. xi + 175 pp. New York, Bureau of Teachers College, Columbia University. 1939. \$1.85.

All About the Blood Groups

Wiener's revised edition should prove to be a most valuable source book for those workers in the various fields in which the blood groups play major roles.

Certain out-of-date items and superfluous explanations have been deleted while all the very latest principles and technics pertaining to the use of the blood groups have been added. Practically every chapter has undergone revision and this revision has been done in terms of deleted or added materials; that is, rewritten in such a way that the reader is not bothered by a "patch-quilt" sort of affair.

Dr. Wiener thoroughly discusses the sub-groups of A and AB as to sensitivity, reactivity, heredity and distribution. The chapters on the M and N groups are enlarged and brought up-to-date while the chemistry of all the substances is discussed more fully than in the previous edition. The anthropology of the varied groups is given in more detail and includes the most recent facts pertaining to their distribution.

The chapter on selection of donors and survival of transfused blood cells has been enlarged to include a chart of correct procedure for cross-matching bloods, a discussion of "blood banks," physical examination of blood donors, and professional

and volunteer donors. The best and latest technics for transfusing blood are given and space is devoted to discussing the advantages and disadvantages of transfusing preserved blood.

Two chapters have been made out of the original one on indications for and reactions to blood transfusions. The first deals with indications for and results of transfusions; the second with reactions to transfusions. The chapter on the medico-legal applications of the groups has also been made into two. One deals with the applications of the groups in cases of disputed paternity, the other with individual identifications of stains.

These are but a few of the many changes which help to round out an altogether satisfactory and necessary book.—*H. S. Hyman.*

Blood Groups and Blood Transfusion, by Alexander S. Wiener. Second edition., 306 pp., Springfield, Charles C. Thomas. 1939. \$5.00.

Principles of Forest Entomology

Following the same style of presentation as used in the first edition, Professor Graham has enlarged and rewritten many parts of his well known text in forest entomology in the recently published second edition.

Some of the additions include discussions of pests not mentioned in the previous edition, namely, the Pandora moth, European Spruce Sawfly, European Pine Shoot Moth, Melanophila beetles, and a number of other Lepidopterous leaf-eaters. The sections dealing with barkbeetles and termites have also been greatly enlarged. A new chapter dealing with other relations of forest insects appears at the end of the book. It includes discussions of insects as transporters of insects; the relation of insects to wood rot and stains, parasitic fungi, and virus diseases; followed by a glimpse into the future. The questions on literature are omitted in the revision.

The chapters on biotic balance, environmental resistance, biotic potential and insect abundance have been expanded to include information from investigations of the past ten years. They cover the underlying principles which should be considered for the control of any insect problem, but are so very important to the forest entomologist or forester because of the inapplicability of most chemical control measures to forested areas.

A few more illustrations have been added, the first edition having 149 and the second 165.

In the revised form the book should continue to serve as a standard text on the subject for years to come.—*R. H. Davidson.*

Principles of Forest Entomology, by S. A. Graham. Second edition, 410 pp. New York, the McGraw-Hill Book Co. 1939. \$4.00.

Racial Origins

At a time when the scientific knowledge of human racial types, especially in Europe, is bandied about and perverted for various extraneous ends it is fitting that a book of this scope and dispassionate impartiality should be published. Coon has provided us with a highly condensed, efficiently organized compendium of the extant knowledge concerning the physical form of man in Europe and the adjacent portions of Asia and Africa from the time of *Homo sapiens'* first appearance in the late Pleistocene to the year 1938. The complex story of the origin, evolution, mixture and migration of European physical types has been correlated wherever possible with culture, linguistics, political divisions of the various periods and of course with geography and chronology. Over 4000 sources in at least 21 different languages have been abstracted for the anthropometric data alone. The basic thesis of the book is that the living white types of Europe owe their original differentiation to a dual origin, namely, (1) a *Neanderthaloid-sapiens* hybrid type which the author believes inhabited Europe during the later part of the Ice Age, and (2) a purely *sapiens* Mediterranean stock with several varieties which began colonizing Europe from the south and east about 3000 B. C. Ten racial types and nine subtypes are recognized in the present white population of Europe. The reader who is familiar with the earlier work of the same name published about 40 years ago by W. Z. Ripley, to whom the present work is dedicated, will find the former work superceded in almost all respects, so great has been the accumulation of anthropological data in

the interval. The physical anthropologist, however, is still forced to deal almost exclusively with phenotypes and Coon's conclusions regarding origins, while for the most part eminently sound in the light of present knowledge, must await more extensive data on human genetics before they will be finally vindicated or rejected.—*John Gillin.*

The Races of Europe, by Carleton S. Coon. xvi+739 pp. New York, the Macmillan Co. 1939. \$7.00.

The Romance of Silver Mining

Of particular interest in these days of governmental expropriation is this account of the fortunes of the Shepherd family in the Chihuahua silver mines. Mistakenly given to me for review as a physicist because of its title, "The Silver Magnet," I nevertheless spent several interesting hours with this book. In 1880, the Shepherd family (nine of them!) and a group of specialists and servants, seventeen in all, left the comforts of Washington where the senior Shepherd (the father of the author) was a Governor of the District of Columbia (a new office to this reviewer) and started on the long and tedious journey to Batopilas, Chihuahua. Here they took over a mine in a two hundred fifty year old mining locality and tried to run it with American efficiency. Details of the process of getting the silver to railhead six hundred miles away, and of the government of Mexico before and during the time of Porfirio Diaz take up several chapters. An account follows of the education of the author back in the United States and of his adventure on the way back to Batopilas. Then work, which seems to be glossed over lightly, while vacation journeyings all over Mexico occupy a great deal of space. The history ends with a defense of Diaz and a diatribe against the "great liberator," Villa.—*J. B. Green.*

The Silver Magnet, by Grant Shepherd, 302 pp. New York, E. P. Dutton and Co. 1939. \$3.00.

Conservation

This volume by four members of the Cornell faculty aims to present for the average citizen the basic facts and principles governing the use of our natural resources. The authors are authorities in the areas covered, and the presentation is ably accomplished with readable text and excellent illustrations. The broad viewpoint of national welfare requires breadth of view of the fields treated, but more emphasis could have been placed upon wise use, and avoidance of waste, and less upon simply conserving. The authors' thesis is that the ruthless exploitation of our natural resources can be stopped only by intensive and extensive co-operation between the Federal and State governments, great and little corporations, and individual citizens. More emphasis should have been placed upon methods of effecting such co-operation, and less upon centralizing responsibility and authority in Federal and international agencies.

The expressed aim of this book is to foster conservation consciousness in the individual citizen by giving him an understanding of the problems. This book makes plain the complexity of the job, and the average citizen who reads it will probably decide that the job can only be handled by people who make it their vocation. All books of the kind will doubtless help the cause of conservation, but nothing short of a vigorous emotional appeal, presented to a bigger audience could hope to incite the co-operative action called for, and then only if accompanied by directions for specific actions by every individual.—*T. H. Langlois.*

Conservation in the United States, by A. F. Gustafson, H. Reis, C. H. Guise, and W. J. Hamilton, Jr. xi + 445 pp. Ithaca, Comstock Publishing Co. 1939. \$3.00.

Bibliography of Drosophila Genetics

Drosophila stands at the pinnacle of experimental material for the study of genetics. The fourteen years from 1910 to 1924 resulted in 381 titles, listed in "The Genetics of *Drosophila*." The fourteen years from 1925 to 1938 provided seven times as many articles, namely, 2,584, making a total of 2,965 titles listed in the excellent bibliography now under review. The arrangement is alphabetical by authors, no attempt being made to classify the subjects. The bibliography is

practically complete on the genetic side, and reasonably so in matters of morphology, physiology and systematics. It should be invaluable to geneticists; and the Imperial Bureau of Animal Breeding and Genetics is to be commended for undertaking its publication.—*L. H. S.*

Bibliography on the Genetics of *Drosophila*, by H. J. Muller, 132 pp., paper bound. Edinburgh, Oliver and Boyd. 5s.

North American Snakes

Dr. Raymond L. Ditmars, already the author of a number of noteworthy books on reptiles, again brings together in this volume herpetological material otherwise available only in widely scattered technical papers, and presents it in non-technical terms useful to both the specialist and layman. Beginning with a general discussion of the distribution, ecology and behavior of various types of snakes of the North American continent, he deals with the snakes of northeastern, southeastern and western North America in three separate parts of the text. For each area, each recognized species and sub-species is listed in a simplified key and subsequently described in considerable detail with regard to size, form and scalation, color, distribution, and habits. Poisonous species of each region are discussed separately from the non-poisonous species. Part V includes a useful chapter on the treatment of snake bites in both man and domestic animals, together with an excellent discussion of the preparation and action both of venom and of anti-venom serum. This is followed by a complete classified list of North American Snakes, comprising 6 families, 48 genera, 140 species, and 138 subspecies, a list of general references, and index, and a series of 48 excellent photographic plates, designed to show diagnostic features.

To the reader already familiar with the snakes of his own locality, the over-all view of the snakes of the entire continent north of Mexico provided in this book should prove an attractive feature. The Ohio naturalist traveling outside the state should find this a useful adjunct to his field equipment.—*John W. Price.*

A Field Book of North American Snakes, by R. L. Ditmars. xii+305 pp., 48 plates. New York, Doubleday, Doran & Co., Inc. 1939. \$3.50.

Saving Our Soils

Soil Conservation is a semi-technical, semi-popular discussion of soil erosion, by the Chief of the Soil Conservation Service, with the aid of various individuals within his organization. Essentially, it is an encyclopedia of the activities of the Soil Conservation Service. The book contains 993 pages, including 358 excellent photographs, 61 graphs, 17 maps and 47 tables of data.

The author develops a vivid concept of the seriousness of erosion and the reader is never left in doubt as to the author's opinions regarding the menace of erosion to agricultural soils. He cleverly presents a survey of the erosion problem of the United States upon a regional basis. He calls attention to the various factors that are responsible for soil erosion. Finally, he suggests methods for controlling erosion and explains the results that the Soil Conservation Service has achieved in the different agricultural areas of the nation.

The author leaves the impression that soil erosion is the only factor that is responsible for soil deterioration. Therefore, the book is definitely concerned with soil erosion and does not stress the broader aspects of soil conservation. It is also implied that the conservation of soils is primarily a federal responsibility in co-operation with the individual farmer and does not emphasize the contributions that the various state experiment stations have made and will continue to make to the problem of soil conservation.

This book should be in the library of every individual who is interested in any phase of conservation. It contains a wealth of material that cannot be obtained from any other source. Teachers of science should have access to the book for reference to their students, since many of the chapters fit into the subject matter of most general science courses. Soils men and agronomists will find it to be a handy encyclopedia of the various aspects of soil erosion in this country.—*L. D. Bayer.*

Soil Conservation, by H. H. Bennett. 993 pp. New York, the McGraw-Hill Book Co. 1939. \$6.00.