disciplines and should, also, make fine supplementary reading for students in introductory zoology courses. Scholarly but popular surveys, such as this, of appropriate areas of the natural and physical sciences are increasingly welcome.

ALVIN NOVICK
Harvard University

The Open Sea. The world of plankton. Alister C. Hardy. Houghton Mifflin, Boston, 1956. 335 pp. Illus. + plates. $6.50.

There have been so many books about the sea and its life, especially in recent years, that it seems impossible that anything new could be said, or that it could be said in a fresh and stimulating way. But Alister Hardy (of Oxford University) has somehow achieved the impossible and has written a book about the sea that reads as if it had been written fresh on the morning of discovery. The enthusiasm with which he approached his task is the key, of course, and it is his ability to convey his enthusiasm without lapsing into purple or mauve patches that makes his book both good reading and sound science. Even the details in small type are full of delightful surprises. Of course, as a zoologist, I may take more delight in some of these than a physical oceanographer would, but perhaps it is he who has permission to skip the small type.

Although the book is primarily about the sea around the British Isles and the plant and animal life found within it, many of the organisms discussed are similar to, if not the same as, those in other parts of the world. Thus, while the addition of a few more examples exotic to the British Isles would have increased the value of the book for American readers, there are enough similarities to make it a valuable and useful introduction to the study of plankton anywhere. It could even serve as a good textbook for introductory courses. The chapters on pelagic larval forms, vertical migration, and deep-sea life are of universal application, and it is refreshing to see so much good, sound zoology here and throughout the book.

There seems to be one school of scientific popularization that holds that readers are not interested in details and that they should be offered only the broad outlines of a subject and not be confused by being presented with both sides of controversial matters. The contributions of this school are usually written by people who are professional writers—or popularizers—rather than scientists, and all too often there are indications that the writer has extended himself beyond the limits of his information without being willing to admit as much. The other school of popularization, of which this book is a splendid example, holds only to the premise that the author should be an expert on the subject he chooses to discuss, and that he is the judge of how best to present it.

Hardy has worked with plankton for more than 30 years and is one of the best known experts in the field. We are fortunate, therefore, that he was willing to write this book and that he found time to add to it the personal touch of his own paintings. Indeed, we are doubly fortunate, for a second volume, on the fisheries, has been promised.

In reading this book, I have had but one regret—that it could not have been the first to introduce me to the open sea and its life.

JOEL W. HEDGPETH
Scripps Institution of Oceanography

Rauwolfia: Botany, Pharmacognosy, Chemistry and Pharmacology. Robert E. Woodson, Jr., Heber W. Youngken, Emil Schlittler, and Jurg A. Schneider. Little, Brown, Boston, 1957. 150 pp. Illus. + plates. $5.50.

About 25 years ago, chemists and pharmacologists in India began to study crude extracts of the old Indian drug *Rauwolfia serpentina.* As a result of this interest, *Rauwolfia* was recently introduced into Western therapeutics and, in less than half a dozen years, not only has become a widely used agent itself but has introduced the concept of tranquilizers to medicine. At the same time that the clinical uses were being explored in hypertension and in the psychoses, further extensive botanical, chemical, and pharmacological work was inspired, and it is the latter fields which are considered in this book. The discussions are straightforward approaches from each of the disciplines concerned and, in places, are quite technical. The book's appeal is therefore to the serious worker rather than to the casual reader.

The first section deals with the botany of *Rauwolfia* and its relatives. The genus is widely tropical in distribution and is not found naturally in Europe or the United States. An intense search has been made for related species high enough in alkaloidal content to be commercially profitable. Both *Rauwolfia vomitoria,* from Africa, and *Rauwolfia tetraphylla,* from tropical America, are being exploited and may prove to be satisfactory species for cultivation.

The second section of the book is on pharmacognosy and describes the physical characteristics, histology, and crude-drug characteristics of the various species.

The third and most extensive section deals with the chemistry of the many *Rauwolfia* alkaloids. In 1952, Emil Schlittler, the author of this section, together with Mueller and Bein, reported the isolation of reserpine, an indole alkaloid, from the crude drug. This was the first alkaloid which showed the typical properties of the whole drug and has, in large part, replaced the crude extracts in medicine. More recently, two other pure alkaloids with reserpinelike actions have been isolated: rescinnamine and deserpidine. Reserpine has been synthesized by an elegant procedure of some 20 steps.

The last section deals with the pharmacology of *Rauwolfia.* The actions of about 30 of the alkaloids are described briefly, and those of reserpine, extensively. This drug has been called phrenotropic, because it influences the function of the mind. Although complex, the influence is in the direction of sedation or depression but toward tranquility rather than toward sleep. The body temperature tends to drop, the blood pressure to be lowered, the pupils to narrow, and the respiration to be slowed. By contrast, the gastrointestinal tract shows increased activity. These actions appear to result largely from a somewhat specific depression of central sympathetic tone. A rather striking biochemical concomitant is a profound serotonin release from the tissues, especially of the central nervous system. Therapeutic use is not discussed in any detail.

Reserpine has high interest, both for its own effects and because it opens new doors of investigation in the field of neuropharmacology, and this book will, accordingly, be most welcome to workers in these fields.

WINDSOR CUTTING
Stanford Medical School

Pharmacognosy. Edmund N. Gathercoal and E. H. Wirth. Revised by Edward P. Claus. Lea and Febiger, Philadelphia, ed. 3, 1956. 731 pp. Illus. + plates. $12.50.

In this edition, Edward P. Claus has ably revised and modernized a justly popular textbook. Classification of plant and animal drugs on the basis of their chemical constituents replaces the previous taxonomic classification, in accord with changing trends in pharmacognosy, with the progressive deemphasis of botanical subject matter in the pharmaceutical curriculum, and with the later thinking of the original authors.

The book retains its primary value as a teaching aid for introductory courses of pharmacognosy as customarily taught in colleges of pharmacy. The inclusion of considerable reference material extends its usefulness to graduate students in the field and to workers in related fields. The writing style is good, and descriptive material is clearly presented. The characteristically excellent morphologic data, valuable in the identification and evaluation of drugs, are well supported by many drawings and photographs.

Claus has instituted timely improvements in the choice of material for inclusion in the text. Discussions of many of the crude drugs of lesser importance have been reduced or deleted, with corresponding emphasis on those more useful to current medical and technologic practice. The chapter on "Allergens and allergenic preparations" has been expanded and reflects well Claus' own experience in teaching this valuable phase of pharmacognosy. The chapter on "Pesticides" has been similarly enlarged in response to the increasing emphasis on pest control and the use of chemical agents for this purpose.

The chapters on "Antibiotics," on "Immunizing biologicals," on "Vitamins and vitamin-containing drugs," and on "Endocrine products" have been rewritten. Discussions of these subjects involve considerable overlapping and some reiteration of subject matter basic to other disciplines in the pharmaceutical curriculum. While I recognize the usefulness of their inclusion in this text, I believe that this value will vary with the treatment given these topics in courses prerequisite or subsequent to the one for which this book is designed. Minor omissions may be noted, as for example the omission of levarterenol bitartrate in the description of the adrenal medulla.

A new heading, "Prescription products," is included for many drugs, as an indication of their inclusion in current pharmaceuticals. The lists given are not complete, and the rapid changes in such categories may lessen the value of these listings in the future. The policy of stating uses and doses continues for many drugs. These follow official descriptions for drugs included in the *Pharmacopeia of the United States of America* or the *National Formulary*. For many, obsolete terms are retained; a review of these in the light of current pharmacologic thinking might well be considered in future revisions.

Appendixes are provided to continue the presentation, in convenient form, of considerable material valuable to the basic study of crude drugs. These include "Powdered drugs" and a "Key to the identification of powders," the "Cultivation of drug plants," and "A taxonomic list of important drugs."

This textbook remains a standard work in the presentation of pharmacognosy. Elements of transition are apparent in the choice and handling of subject matter, yet basic values are retained. I anticipate the continued excellence of future editions of this familiar book in the hands of the current author.

FRANK T. MAHER
Mayo Clinic

An Atlas of Diseases of the Eye. E. S. Perkins and Peter Hansell. Little, Brown, Boston, 1957. 91 pp. Illus. $10.

This most recent and beautifully printed atlas of diseases of the eye covers the commoner external and internal diseases and disorders with superbly colored drawings and photographs and concise text, with the latest information on each subject. It is designed for general physicians and for students, to fill an urgent need. The former will find answers to questions regarding vascular and general systemic disease in which the eye participates. In addition to this, the student may differentiate the trivial from the more important.

The photography is excellent, and the drawings are incomparable. The format is modern, attractive, and very readable. By means of eight-color photolithography, the printer has achieved the best possible results with the illustrations. Roche Products, Ltd., subsidized the work, which, because of this, sells at a fraction of the cost of the printing.

RAYMOND L. PFEIFFER
Institute of Ophthalmology, New York

Textbook of Human Anatomy. J. D. Boyd, Wilfrid E. LeGros Clark, W. J. Hamilton, J. M. Yoffey, Solly Zuckerman, and A. B. Appleton. Macmillan, London, 1957 (order from St. Martin's Press, New York 17). 1022 pp. Illus. $16.50.

The three standard systematic anatomies in current use are tomes in the 1500- to 1700-page range—6 to 7 pounds of book. When they first appeared 55, 64, and 99 years ago, they were much smaller, but they have grown with nearly every edition until each has become a compromise between a reference compilation and a textbook. Cunningham's *Manual* and Grant's *Method,* as topographic rather than systematic approaches, have found a place in anatomic pedagogy, but, except for the now defunct *Piersol,* the "big three" among the systematic books have had no serious competitors for half a century.

This new work is a textbook designed for the beginning student who, because of curriculum changes, often has less time now for anatomy than he did a few years ago. The standard approach is notably abridged, and the resulting book has less than 1000 pages of reading matter. These changes for the benefit of the beginner will, however, give the book less value on the physician's reference shelf.

The six British anatomists who have collaborated are representatives of anatomy departments at the universities of Cambridge, Oxford, Bristol, Birmingham, and London. Hamilton and Yoffey wrote the introduction; Hamilton is author of chapters on the locomotor system (258 pp.) and on the digestive system (98 pp.). Yoffey's chapters deal with the cardiovascular system, including lymphatics (113 pp.), and with the respiratory system (33 pp.) and the spleen (4 pp.). Zuckerman has chapters on the urogenital system (100 pp.), on the ductless glands (34 pp.), and on growth (22 pp.). Clark writes on the central nervous system (129 pp.), and Boyd takes up the peripheral nervous system (143 pp.) and the sense organs, including the skin.

Two things about the plan and organization strike one immediately. First, each chapter contains a fairly large number of orientating remarks, anatomic generalities, and correlations. The authors try to present anatomy as the science of body structure rather than as a listing of topographic relationships. Depending on the topic at hand, these correlations may refer to embryologic or phylogenetic features, to the classification of information, to function, to x-ray appearances, or to aging, growth, and variation. Correlations with microscopic anatomy are more extensive in this book than in other textbooks of gross anatomy. About 15 percent of the book treats of generalities of the sort mentioned.

The second thing to be noted is that the usual detailed descriptive anatomy is markedly abridged. For instance, an artery is described simply as arising in a certain way, proceeding in front of such-and-such a structure, and supplying a certain region by means of ascending and descending branches. Details on the relations of the vessel and on the minor branches and distribution are omitted. Descriptions of individual carpal, metacarpal, and phalangeal bones, and of the minor foot and skull bones, are curtailed or omitted. The facial muscles of expression are named, but only four are described. Anatomists are bound to question the desirability and extent of the cutting that was done in various