

shading seem more complex than the others, and I suspect that many students will look at the illustrations and give up the idea of learning to correctly shade biological drawings.

The last page of the text is devoted to rules for effective lettering, but suggestions about acceptable labeling patterns are missing. This is one area in which many students need help.

It is evident from Bethke's selection of practical techniques that he has had considerable experience in helping the beginner in biological drawing. He has clearly covered essential techniques of representational drawing—techniques that can be applied by high school or college biology students with or without artistic talent. The book should meet at least some of the needs of these individuals.

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**THE CHEMICAL BASIS OF PHYSIOLOGICAL REGULATION**, by E. J. W. Barrington. 1968. Scott, Foresman & Co., Chicago. 274 pp. \$2.95 (softback).

This is part of the Scott, Foresman "Undergraduate Biology" series. Samuel A. Matthews states in his foreword that the series is designed for introductory courses or as supplementary material for intermediate courses. If students have had a good BSCS background in biology, this book would be excellent as a first-year college text; but for the most part I feel it is more appropriate to a second-level course.

Barrington writes interestingly. He explains the early research in each of the areas he covers, then continues with the modern, more sophisticated research and the current theories on each topic. He makes the reader aware of the very human nature of the investigators by narrating some of their feelings and excitement at each new discovery.

The book is in no way encyclopedic, but the topics chosen are covered in depth, with illustrations from the invertebrates, fish, and amphibians, as well as man. The topics are the uptake of oxygen, uptake of energy, storage and release of energy, water and ions, temperature and water, and temperature and terrestrial life. The author's liberal use of graphs and charts helps the reader follow the textual material. An excellent bibliography ends each chapter.

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**ESSENTIALS OF BIOLOGY**, by Willis H. Johnson, Louis E. Delaney, and Thomas A. Cole. 1969. Holt, Rinehart, & Winston, New York. 612 pp. \$9.95.

Adapted from the authors' *Biology*, this is a new undergraduate text for the one-semester course. It is an ex-

ample of what we have learned to expect from the authors and publishers: a well-organized and beautifully executed book. There are several unusual features, such as phonetics of Greek letters, an historical chart, and biologic acronyms. There is a glossary. Chapter-end materials include problems, questions, and bibliography. The illustrations are splendid.

Divisions of the book are (i) molecules, cells, and tissues; (ii) flowering plants and vertebrates; (iii) representative plants and animals; and (iv) dynamics of organisms and species. The bulk of the treatment is in the second unit; however, there is a wealth of detail in the first unit.

This is a text done with fine attention to detail, accuracy, and exposition. There is no chit-chat, and all sentences are straightforward. For the secondary school teacher, the book has fine possibilities for the upper-level course, and of course it is well worth inspection by the undergraduate teacher.

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**LIFE IN THE LABORATORY**, by Donald G. Humphrey, Henry van Dyke, and David L. Willis. Abridged ed., 1969. Harcourt, Brace, & World, New York. 264 pp. \$3.50.

Twenty-one laboratory exercises are included. This is too many exercises for a one-semester course in general biology and not enough for a two-semester course. This shortcoming is more apparent than real, however. The exercises are well written and well thought out, and they provide a logical and effective sequence if the manual is used in a cover-to-cover fashion. Conversely, they are so written that an instructor may adopt his own sequence or eliminate exercises without loss of meaning or continuity for the student. Thus, the instructor of a one-semester course may choose the exercises he thinks are most useful for his students or best fit his emphasis in the course. For the instructor of a two-semester course, each exercise offers suggestions for further study; therefore the instructor can use some of these suggested studies along with the formal studies in order to tailor the manual to his course.

A broad spectrum of biology is offered by the authors. They have recognized the impact of BSCS on modern biology teaching and have also recognized the fact that the "old" biology was not without some merit.

The teacher's guide for the manual is concise and complete in providing the teacher with the purpose and methods of each exercise. Thus, it educates the old professor in the "new" biology and the young teaching assistant in the "old" biology. All in all, my opinion is that this is one of the best first-

year laboratory manuals on the market.

Approximately 1,000 students have used the manual in a freshman biology course for nonmajors at the University of Missouri at Kansas City. The instructors, teaching assistants, and students are generally pleased with it. The only valid complaint is that ecology is ignored. This is regrettable, particularly in this day and age, but it is understandable. Introductory ecology exercises usually involve field work, and it is difficult to move a large class to the field during a regular two- or three-hour laboratory period. In addition to the logistics, there is also the problem of keeping a large class from destroying the environment it has been taken to study. Despite these problems, however, laboratory exercises in ecology are not impossible to develop, and it is hoped that the next edition of the book will include a few.

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**SCIENTIFIC AMERICAN RESOURCE LIBRARY: READINGS IN THE LIFE SCIENCES**. 1969. W. H. Freeman & Co., San Francisco. 7 vol., 2,832 pp. \$70.00.

The articles that make up this resource library originally appeared in issues of the *Scientific American*, dating back to 1948. If not seen in its original format, each article can, secondarily, be purchased in the "Scientific American Offprint" series. This third ecadecy consists of these offprints in the life sciences from the *Scientific American* being bound in seven hardback volumes. Not only has the quality of the type face suffered over the years, but the halftones have become more blurred with the passage of time—a situation that is not helped by the quality of paper used for the purposes of the resource library volumes. The colored illustrations also lack the clean crispness of their first journal appearance.

While I don't deprecate the publisher's ingenuity in devising ever-more-creative packaging for the same materials, it is to be deplored that, after the passage of 22 years for some of the articles, not one word has been changed nor one attempt made to update the material therein. The plain fact of the matter is that many of the articles, no matter how modern they were upon their first appearance, are now older than the students for whom they are intended and are hardly to be considered the latest word on the subject. This lack of updating has extended even to the short author accounts that originally accompanied each article. George Beadle, for example, is identified as the head of the California Institute of Technology's biology division; Fritz Went is also still there; Ralph Gerard is a professor at the University of Michigan; and Verne Grant is chief geneticist at the Rancho