

they open the cover. This text requires that a large amount of reading be done to complete the program and has many terms to be committed to memory. These last two points concern me a great deal, as much time and effort has been spent in the past decade in moving away from the long unbroken text with large vocabularies. This program is basically a chemical approach to biology; therefore it is not surprising to find the chapters of genetics, historical geology, and ecology at the end of the text. This is unfortunate, as ecology is getting much desired attention today and with its position being at the end of the course it will probably be skipped or glossed over.

This program is worthy of your consideration. It might have a place in your curriculum plans but doesn't seem to be very appropriate for a general audience.

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THE PROCESS OF BIOLOGY: PRIMARY SOURCES, ed. by Jeffrey J. W. Baker and Garland E. Allen. 1970. Addison-Wesley Publishing Co., Reading, Mass. 388 pp. \$4.95.

This is a collection of 30 great research papers. The shorter papers appear in full; the longer papers are

abridged without sacrifice of content. There are six sections, each with an intergrating introduction: method and communication in science; the cell and general physiology; heredity and the chromosome theory; the nature of cell differentiation; ecology, species, and evolution; and the origin of life.

It is not necessary to read the sections in sequence. However, to derive the greatest benefit from an individual paper, a section, or the entire book, one must have a profound interest in approaches to science, techniques of science, and objective reporting of science.

The Process of Biology: Primary Sources should have great appeal to students in college biology courses who wish to examine complete or carefully abridged manuscripts of papers that are landmarks in biology.

Richard H. Dunn
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SYMBIOSIS: ORGANISMS LIVING TOGETHER, by Tomas C. Cheng. 1970. Pegasus Division, Western Publishing Co., New York. 256 pp. \$2.25 softback, \$6.95 hardback.

The Biological Sciences Curriculum Study is starting off its new series, "Pegasus Topics in Biological Science," with *Symbiosis*. It is a brief, easy-to-read introduction to a subject that is touched on in every high school and college biology course. The study of symbiosis is growing, primarily because of the new interest in the environmental sciences. Starting with an historical review, the author quickly updates the reader with current research. He then concentrates on the effects of symbiosis on relatively insignificant biomes and on our social welfare in general.

Typical high school texts do little more than define symbiosis, mutualism, parasitism, and kindred relationships—citing an example or two at most. However, this monograph treats the subject in sufficient detail to interest any teacher or student fortunate enough to study a copy. The technical vocabulary is minimal. Instead of concentrating on overworked textbook examples, Cheng concentrates on dozens of organisms that are likely to affect tourists, servicemen, and the home citizen. He also discusses many colorful but harmless marine forms—some of them economically important. Readers may recognize some of the organisms from courses in parasitology: Cheng treats the concept of symbiosis rather broadly. He provides anatomic descriptions and explains life cycles, defense mechanisms, nutrition, and hormonal relationships. These details enhance the value of the book for elementary and advanced students alike. There are recommended references for each of the topics covered.

The book has a superior index and many diagrams, charts, maps, graphs, and photographs.

If the quality of *Symbiosis* is typical of the new series, biology teachers and students can look forward to another superior series from BSCS and its array of versatile writers.

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PATTERNS OF LIFE [booklet series], ed. by Biological Sciences Curriculum Study. "Animals of the islands," by C. J. McCoy (46 pp.); "Tortoise behavior and survival," by Walter Auffenberg (38 pp.); "Antibiotics," by D. Perlman (35 pp.); "Energy transfer in ecological systems," by Richard G. Wiegert (36 pp.). Rand McNally & Co., Chicago. Prices not given.

These pamphlets, being prepared for BSCS by authorities in various fields, are designed to supplement any general-biology program. Each "emphasizes the ecological aspects of the subject at hand and stresses the explorations and methods of investigation which led to the present knowledge in that field." The 8½-by-5¼-inch size makes these booklets convenient to handle and carry. They are attractively covered with nicely illustrated, colored hard paper, and the text paper is of a quality that renders the halftones in good detail. The type is easy to read. Each booklet is liberally sprinkled with photographs, drawings, graphs, charts, and devices for breaking the monotony of print. Also, each has an index and a list of suggested readings. Well-done, authoritative booklets of this sort are always welcome. Four of the booklets are reviewed here.

Jack McCoy has first-hand knowledge of islands in the Caribbean, the Pacific, and the Sea of Cortez. A description of the kinds of islands is followed by a map showing the world's most important islands. The author explains the determiners of an island fauna: location and size of the island, its age, and its distance from habitable land. Of particular interest is the discussion of dispersal, with examples of organisms that have invaded new lands by flying, rafting, or swimming. A good account is given of adaptation to island life and of the genetics of rapid evolution in insular populations: the Galápagos fauna, especially Darwin's finches, exemplifies adaptive radiation. McCoy points out the vulnerability of island forms to introduced predators and parasites and to changes in the environment. Examples are given of species that have become extinct because they have been caught in "evolutionary traps" (Sewall Wright's phrase).

Many of the illustrations are whole-page. Some add to an understanding of

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the text, but a few, such as that of the Ridley turtle and of the Galápagos land iguana, could have been omitted and the space better used. Of the 19 suggested readings, only five are later than 1960; however, most of the others are pertinent.

A large amount of information is squeezed into this booklet. The subject is so vast that no work of this size could do real justice to it, but McCoy has done a commendable job of introducing a variety of concepts.

Walter Auffenberg, of the Florida State Museum, is an authority on tortoises. He begins his booklet with an introduction to tortoise systematics, using the fossil record and giving particulars of the four living species of *Gopherus*. Courtship behavior is described in *Gopherus* and compared with that of two other genera, *Testudo* and *Geochelone*. The remainder of the booklet is devoted to *Gopherus* species: their ecology, food preferences, shelters, construction of commensal organisms, behavioral relationships, and distribution. An interesting section concerns water and temperature regulation in these dryland forms. Finally, Auffenberg pleads for the conservation of tortoises.

The photographs, diagrams, and maps are well chosen. Only eight references are given: more might have been listed,

including some that are easily obtainable. However, the booklet serves well to introduce an interesting but little-known genus.

Perlman's special interest is antibiotic production, action, and biosynthesis. During his 20 years in the pharmaceutical industry he has contributed much to our knowledge of clinically important antibiotics. His booklet amazingly condenses the essentials of this relatively new field of research. The use of tables and drawings is particularly good. A short history introduces the reader to some of the workers responsible for much of our current knowledge of the subject. A two-page table summarizes the microbial sources, antibiotic spectra, and uses of 46 antibiotics. Techniques for producing and isolating them are quickly but clearly described and illustrated; quite a bit more space is devoted to their commercial production. There is a section on medicinal and agricultural uses of antibiotics, along with a table of agents of infectious diseases and the antibiotics used against them. The suggested readings are basic, but there are only six of them—none later than 1965. An improvement in this regard would be the addition of up-to-date popular articles in journals.

This is an excellent overview of a

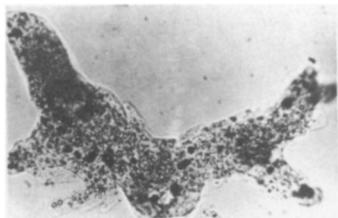
field of applied biology to which most students do not get proper exposure.

Richard G. Wiegert, of the University of Georgia, is well known for his work in ecology; structure and energy flow in populations are the primary concerns of his current research. This booklet differs little from most other introductions to the subject of energy relationships, but it does a good job. In discussing aquatic and terrestrial ecosystems Wiegert compares freshwater springs (in Florida and Massachusetts) and describes pasture, old field, and salt marsh. Illustrations are kept to a minimum, which is good in a booklet of this length, and they are selected for attractiveness as well as explanation. The seven suggested readings are up-to-date but are all in one journal; again, a longer list of more readily available articles would help. This booklet adequately fulfills its function as part of a recommended series.

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Emporia

PRINCIPLES OF BIOSYSTEMATICS, by Judy Longley Lines and Thomas R. Mertens. 1970. Educational Methods, Inc., Chicago. 145 pp. \$2.25 (softback).

This reviewer has long awaited a



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