

in detail in this chapter. Chapter 10 discusses control of protein and nucleic acid synthesis. The section on genetic studies with the tumour viruses is fascinating.

The text is written clearly and knowledgeably which makes this an interesting readable book. The author has updated the material and included important recent developments in molecular biology. The text is suitable for introductory undergraduate courses in cell biology and molecular biology. It can also be used as a supplementary reading book in introductory biology, biochemistry and genetics courses.

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Ecology and Environmental Biology

INTERDISCIPLINARY ENVIRONMENTAL APPROACHES, ed. by A. E. Utton and D. H. Henning. 1974. Educational Media Press, Costa Mesa, Calif. 256 p. \$8.95 softback.

The National Environmental Policy Act of 1970 requires that all agencies of the federal government utilize a systematic interdisciplinary approach that will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and decision-making that may have an impact on the environment. Efforts to meet that requirement should be aided by this work. In listing the special features of the book, the publishers point out that it presents the largest collection of environmental theory by disciplines to be found under one cover, contains essays designed specifically for this project rather than reprinted articles, emphasizes the theme of resource rehabilitation, and contains suggestions toward environmental planning in over 20 academically related areas.

The average student or teacher of high school biology will not find this work easy to read, but the more than adequate credentials of the editors and authors indicate that this may serve as a useful reference.

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EXPERIMENTAL MARINE BIOLOGY, ed. by Richard Mariscal. 1974. Academic Press, New York. 377 p. \$18.50 hardback.

This book will be of the most value to the collegiate community. However, the secondary school teacher will find the first chapter, which delves deeply into the establishment of closed system marine aquariums, very helpful. The

text is divided into seven chapters, each one a complete unit produced by independent contributors. Except for the first chapter, there is no interdependence among the other chapters, each one being applicable to special investigative procedures. These sections cover a broad spectrum of experimental approaches. Several of the chapters would of necessity be limited to schools in coastal areas (for example chapter 2 "Field experiments in marine ecology" and chapter 3 "In situ approach to marine behavioral research"), but this should not deter other colleges from the purchase of the book since the remaining chapters cover comparative physiology; comparative endocrinology; comparative biochemistry; toxicology; and developmental biology (the latter dealing in part with algae).

If the funds are available to follow the thorough installation and maintenance instructions of chapter one, the inland university would have a welcome opportunity to contribute to the burgeoning field of marine biology. Very few, if any, secondary schools would have either the money or the equipment necessary for most of the experimental work.

This is an interesting compendium of the various areas of experimental marine work ranging from miniaturized electronic tracking to scanning electron microscope studies. Probably the greatest general value of the book would be the extensive (8-14 pages per chapter) bibliography at the end of each chapter. Although interesting to the general reader in the field, the book is intended primarily for the serious researcher.

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WILDERNESS AREAS OF NORTH AMERICA, by Ann and Myron Sutton. 1974. Funk & Wagnalls, New York. 394 p. \$10.00 hardback.

Every individual who enjoys the out-of-doors without the internal combustion engine should own this book. The authors have attempted to catalogue and describe areas in North America where outdoor enthusiasts can participate in a wilderness experience through climbing, backpacking, hiking, canoeing, or cross-country skiing. The 500 areas are scattered from the Arctic Circle to Panama and include swamp, forest, desert, tundra, prairie, and ocean floor.

The descriptions are concise, averaging less than a page, and include information not readily available from other sources. Plant and animal species for which the area is noted are given, along with references to the geology and climate. Hazards that may be encountered and special equipment that will be needed are also listed. Because the areas range from national parks to

private lands, regulations and restrictions for use of the sites are described. Towns where tourist accommodations may be found are named and the mileage to each is given.

The average reader will not wish to read this book from cover to cover but will use it as a reference. If, however, he does choose to read it in its entirety, he will come away with the feeling that there is hope for the preservation of wilderness experiences for posterity. If he wishes to keep track of the areas he must see before he dies he will find, by being very selective, that he might complete the list if he lives to be 153.

It is obvious that the authors could not collect all of the information personally, but the information from these areas has been verified by local authorities. The continuity is good, and in the accounts actually experienced by the authors a feeling for the environment seems to leap from the pages.

The book is organized according to geographic regions with a crude map of each at the beginning of the specific section. The index, organized according to the names of the wilderness area, is complete, but no subject index is included. There are 88 black-and-white pictures of the areas and species described.

The most valuable gem of information in all but a few accounts is the address from which maps and more information can be obtained. There have been times when I would have given twice the price of this book for just one of these addresses.

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PEST CONTROL, by Arthur Woods. 1974. Halsted Press, New York. 409 p. \$29.50 hardback.

Although arthropod pests are emphasized, essentially all known agricultural and health-related pest groups, from viruses to vertebrates, are considered in this comprehensive treatise. The ecology of pest species is covered very nicely at the outset and most of text that follows is devoted to enumerating a multitude of control methods with a bit of history as well as the economic and ecological considerations of each method with respect to each pest group. Case histories are amply and appropriately interspersed in the text. More space is devoted to biological than chemical or other methods of control, but the last chapter presents a rather compelling argument for "integrated control"—the rational use of all the appropriate controls orchestrated in such a way as to effect maximum control with minimum economic or environmental stress.

The book is interesting and very well written but the general reader or non-specialized undergraduate would likely be discouraged in places by the tech-

nical terminology. Scant use is made of figures and the 29 plates are not only of mediocre quality but crammed together in the center of the book rather than being interspersed in the text as you might expect in a book in this price range. The price alone would preclude its use as a textbook in many courses or even as a reference in libraries with tight budgets. Such a comprehensive treatment (22 pages of references and 16 pages of subject and scientific indexes) of this very timely topic should not be priced out of the hands of those who could derive immediate benefit from it.

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WORLD PROTEIN RESOURCES, by Allen Jones. 1974. Halsted Press, New York. 381 p. \$17.50.

Protein is essential to life. Inadequate amounts and types of protein in the diet are major problems throughout the world. The author feels that there is no shortage of protein world-wide, rather that the problem is in inefficient distribution of protein foods, the failure to utilize certain protein sources and to thoroughly explore other sources. The book is divided into five parts. The first, an extensive "Introduction to Proteins" has nine chapters. Protein and amino acid chemistry, proteins in the diet, vitamins, proteins, minerals, allergy, and food preservation are covered in an informal and interesting style. This introduction provides a sufficient review of general nutrition so that the importance of proteins, interacting with the other components of an adequate diet, is made clear.

In the second part, "Animal Proteins," the author discusses common and uncommon sources of meat throughout the world. Among the more uncommon examples of interest to protein technology are snakes, which the author considers to be the sources of medical protein because boiled snakes are thought to have curative powers. Variability in meat, fat content, and simulated meat products are also discussed in this section. There are additional chapters on poultry, dairy protein, and fish products.

Chapters on cereals, fresh vegetables, oilseeds, legumes, vegetable genetics, and green leaf protein are found in part three. The pros and cons of individual plants as potential and actual protein sources are presented and discussed in an effective manner. There is hope that algae will provide low-cost protein from the sea. Algal protein sources, along with fungi, yeasts, and bacteria are considered as possible and actual sources of usable protein in part four. Areas of interest discussed in this section include aspects of the utilization of oil and of waste products as raw materials for protein production.

The fifth, final, and most valuable part of this book is entitled "Protein Economics." The problems facing world agriculture are many and complex, ranging from inflation to obsolete laws. The author attempts to calculate the potential output of protein possible on earth and suggests ways to approach this theoretical maximum. He also lists those factors, such as labor problems and the failure to utilize land suitable for cultivation, which tend to inhibit protein production. A discussion of the unique protein situation in about 40 selected countries is interesting and adds much to the book. In many cases it is apparent that solutions to the protein problem are not easy nor will they be quick in coming. Trends that may affect protein technology and thereby the future of man on earth are presented in the final chapter. Population growth, urbanization, fuel costs, health problems, and numerous other factors are shown to influence and be influenced by protein.

Tables of data are numerous, easy to understand, and provide much for the reader to consider. Unfortunately, references to literature used in the preparation of this book are not included. The literature available to the author must have been extensive and a collection of these sources of information would be helpful to many readers. This book is both well-written and timely and it should be of special value to nutritionists, agriculturalists, biologists, and concerned lay people.

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Education and Professional Concerns

U.S. COLLEGE SPONSORED PROGRAMS ABROAD, ACADEMIC YEAR, by Institute of International Education. 1974. Unipub, New York. 89 p. \$3.50 softback.

Available programs are listed country-by-country along with information on dates, cost, and sponsoring institutions and a short synopsis. The concise listings give a quick grasp of possibilities for the teacher desiring to study abroad for a year or for the undergraduate seeking a college or university that sponsors overseas study as part of a particular curriculum.

SUMMER STUDY ABROAD, by Institute of International Education. 25th ed., 1974. Unipub, New York. 86 p. \$3.00 softback.

This listing of college and university summer courses abroad is published yearly. The book includes a country-by-country listing of courses and sponsoring institutions and a brief summary of

the course with all-inclusive dates and costs. As with all IIE booklets, the thorough coverage of the area is apparent and the style permits easy access to desired information.

TEACHING ABROAD, ed. by Marjorie Beckles. 1973. Unipub, New York. 68 p. \$4.00 softback.

This booklet provides information on (i) U.S. Government Programs, (ii) foreign government programs, (iii) multinational programs, (iv) international corporation programs, (v) private associations and schools, (vi) volunteer teaching opportunities, and (vii) a list of publications and embassy addresses for future information. Each program listing includes criteria for employment, application deadlines, remuneration, and addresses of the sponsoring groups.

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Evolution

THE ECONOMY OF NATURE AND THE EVOLUTION OF SEX, by Michael T. Ghiselin. 1974. University of California Press, Berkeley. 358 p. \$12.95.

Michael T. Ghiselin may be familiar to the readers of *American Biology Teacher* as the author of the well-received *Triumph of the Darwinian Method* (reviewed in *ABT* 35[6]:360), which in 1970 won the Pfizer Prize of the History of Science Society. In his new book Ghiselin reveals the depth and breadth of his understanding of biology and the underpinning philosophical positions on which biological science is based. Ghiselin seeks to develop a Darwinian nonteleological view of the "natural economy," using a laissez-faire model rather than the traditional cooperative ideal. He reviews a variety of theoretical topics, most of which concern the evolutionary interpretation of sex and related reproductive phenomena.

Ghiselin repeatedly challenges the validity of purely theoretical systems and emphasizes the importance of empirical evidence, citing a large body of factual material on "reproductive strategies" in both the plant and animal kingdoms. The author's discussion is extensively documented with literature citations and the book is concluded with 69 pages of cited references. This extensive bibliography rightly suggests that this book is not light reading, but is rather an endeavor to be engaged in by the serious student of evolutionary biology. The casual observer must not be misled by such humorous chapter titles as "The Loves of the Plants, or, the Biological Role of Sex," "Love's Labor Divided, or the Union