

Book Reviews

Recording the Changing Biota

The Changing Flora and Fauna of Britain. Proceedings of a symposium, Leicester, England, Apr. 1973. D. L. HAWKSWORTH, Ed. Published for the Systematics Association by Academic Press, New York, 1974. xiv, 462 pp., illus. \$23.75. Systematics Association Special Volume No. 6.

This book is the report of a symposium held last year to consider the changes in the British flora and fauna since systematic records began. The plan is taxonomic, and each author attempts to present the facts and discuss the causes; there are chapters on the bryophytes, freshwater algae, vascular plants, mammals, terrestrial mollusks, spiders, and so on, 21 in all. The emphasis is on the more organized records of the last few decades, but most authors have interesting accounts that span the modern scientific period from about 1800, and a few draw on historical sources. The aim was to provide a foundation for continuing and more adequate observation of the changing biota.

It is surprising, perhaps, in such a densely populated and industrialized country, how few species have become extinct. The mammals have lost only four indigenous species, beaver, bear, wild boar, and wolf, out of a total of 46, since Roman times. But Britain is very complex physiographically, with local enclaves that provide for refuge against changes of many kinds. There are even substantial areas, notably in the Scottish Highlands, where the impact of man is even yet not acute. (How much longer this situation can be maintained, under pressure of offshore oil drilling, new towns, and ever increasing tourism is another matter.) For the fishes, however, the advent of canals, reservoirs, land drainage, direct management and introductions, toxic wastes, eutrophication, and temperature changes have grossly altered the original pattern, and the author sums up, "The freshwater fish fauna of the British Isles can be seen to be essentially what man has made of it." In the Lepidoptera the changes induced by man are less pervasive, and unrelated changes can also be perceived. Some 16 species

of butterflies and the larger moths (out of about 800) have become extinct since 1850, the majority probably because of the completion of the drainage of the fens for agriculture. But the work of observers throughout the country makes it possible also to record that 25 others have become established in Britain in the same period. Eight of these now have extended ranges, 12 are static, and 5 others persisted for from 7 to 37 years and then died out. Most species settled in the years 1921–1960, a period of climatic amelioration in which other, already resident species increased their range.

This volume, along with other recent publications, stands as a tribute to the work of the Nature Conservancy, the Biological Records Centre at Monk's Wood, and British naturalists generally. The situation in Britain is especially favorable for the detailed probing of the continuing and complex encounter between other organisms and man. The encounter is one between organisms whose capacity for change is limited to the genetic mode and an organism whose specific ecological impact can change also by cultural development, repeatedly, radically, and at an ever increasing tempo. The work is obviously of the greatest importance, but also of the greatest intricacy and unique in kind. The book under review assembles some of the foundations for this necessary study.

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A Famous Quarrel

The Fossil Feud. Between E. D. Cope and O. C. Marsh. ELIZABETH NOBLE SHOR. Exposition, Hicksville, N.Y., 1974. xii, 340 pp. + plates. \$12.50. An Exposition-University Book.

The most famous scientific quarrel of the Victorian era is the long and bitter Cope-Marsh feud. The antagonists were the vertebrate paleontologists Edward D. Cope of the University of Pennsylvania and O. C. Marsh of Yale

University. In this account of the quarrel Shor has concentrated on the journalistic explosion of January 1890 which was initiated by Cope in the *New York Herald*.

The book is divided into three parts. The first part includes very good accounts of Cope, Marsh, and the background and development of their antagonism. With carefully chosen words Shor has captured the essences of the warm but impetuous Cope and the glacial and unloved Marsh.

Cope's charges against Marsh were written by William H. Ballou, a self-promoting free-lance writer and very amateur mycologist of no particular ethical standards. Shor obviously enjoyed tracking down the various claims Ballou made for himself, including those listed in the 1938 edition of *Who's Who in America*. She makes a clear case that Ballou was a fraud and four-flusher who hung around the fringes of science and journalism. In other words, Ballou was the sort of man with whom Cope would never have associated had he not been blinded by his anger and indignation at Marsh.

The major portion of the book is a verbatim presentation of almost the entire series of columns by Ballou that were printed in the *Herald* between 12 and 26 January. To me, a vertebrate paleontologist and a devotee of the history of science, it is all interesting and pertinent. In the charges, denials, and countercharges and in the quotations from participants and bystanders in science there is a wealth of information. But I think the book would have been improved if this part had been cut in half. I would not relish the task of selecting which items to omit, but I am sure that from a judiciously selected 50 percent the reader could get a sense of the nature and intensity of the feud and just as good an understanding of the personalities of the participants.

The last part of the book is a useful section consisting of short sketches of 98 men who played a role in or were touched by the feud. Here, too, the author has used well her gift for capturing in a few sentences a man and his work.

We are indebted to the author for sharing with us two quotations from letters of the late Alfred S. Romer, with whom she corresponded while preparing this book. One tells of the negative impression that Ballou, then in his 60's, made upon young Romer when he was a graduate student at Columbia University and the American Museum of Natural History. Romer also wrote that

"the old-timers I knew when young (Cope and Marsh had died before) all liked Cope and almost to a man they hated Marsh's guts" (p. 218). That says it all.

The book is nearly free of errors. However, Cope, Marsh, and Leidy were not (as is said on p. 33) "America's first three paleontologists." It is surprising that this is only the second book to be written on the Cope-Marsh war, a subject that would seem to be a natural for a book, or even a movie. The first such book, *The Dinosaur Hunters* by Robert Plate (McKay, 1964), is not listed in the author's bibliography.

The Fossil Feud will be of special interest to vertebrate paleontologists and vertebrate zoologists. It will also be of interest to more general scientists and historians, especially if they will merely scan part 2 to catch some of the more lively vituperation of Cope and Marsh. The chapter on Ballou is a noteworthy contribution, for it is mainly newly gathered material. In summary, Shor has written a helpful and interesting account of a fascinating episode in the history of science.

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Carbohydrates and Lipids

Effects of Carbohydrates on Lipid Metabolism. I. MACDONALD, Ed. Karger, Basel, 1973 (U.S. distributor, Phiebig, White Plains, N.Y.). x, 310 pp., illus. \$52.35. Progress in Biochemical Pharmacology.

One of the most important accomplishments of the research effort in atherosclerosis during the last 30 years has been to provide some understanding of the role played by plasma lipids in this disease. Until recently, because of the apparent role of cholesterol in the etiology of the disease, most of the lipid work concentrated on cholesterol metabolism and its regulation.

The emphasis began to change in the early 1960's when Ahrens and his co-workers described the entity of carbohydrate-induced hypertriglyceridemia. Hypertriglyceridemias of this type are endogenous in that the triglycerides are derived through biosynthesis rather than from dietary fats. Subsequently, evidence began to appear that certain forms of endogenous hypertriglyceridemia may, like hypercholesterolemia, predispose to atherosclerosis. Acetyl coenzyme A and glycerol 3-phos-

phate, the building blocks used for triglyceride biosynthesis, are derived in these situations almost entirely from dietary carbohydrates. Taken together, these findings have led to the conclusion that some cases of hyperlipidemia result from excessive dietary carbohydrate intake rather than fat intake.

A second impetus for studies of carbohydrate effects on lipid metabolism was the finding that certain dietary carbohydrates are more hypertriglyceridemic than others. Sucrose, because of its fructose content, appears to be more hypertriglyceridemic than starch. This has led to the suggestion that the Western diet, with its relatively high content of refined cane sugar, may contribute to atherogenesis. These controversial, important issues are the subjects of the present book.

The book consists of eight chapters. It begins with two biochemically oriented chapters that cover the enzymology of carbohydrate utilization and lipid biosynthesis. Both are comprehensive within narrowly selected subject areas. The lipid chapter deals primarily with the phosphoglyceride and triglyceride biosynthetic pathways, whereas the carbohydrate chapter is confined to hexose, xylitol, and sorbitol degradation. These chapters are well organized and filled with useful illustrative material, including exhaustive lists of references. This introductory material is followed by six chapters that are more physiologically and clinically oriented. Topics covered include plasma triglyceride turnover, adipose tissue metabolism, hepatic lipid biosynthesis, and diabetes mellitus. These chapters are brief and readable and succeed admirably in presenting a thorough review of each subject. The available information, often including methodology, is evaluated critically. Interesting hypotheses and speculations are presented in many cases, making these sections more than simple repositories of factual information. A number of the chapters conclude by giving the author's views on the current status of the area, a practice that is helpful because of the large mass of sometimes conflicting data. In no case is the interpretation one-sided or dogmatic. This objective treatment greatly enhances the value of the book.

Anyone concerned with lipid metabolism, carbohydrate metabolism, hyperlipidemia, or atherosclerosis, at either the basic or the clinical level, should find this book valuable. Moreover, many biological scientists whose work is not

primarily in these areas but who are concerned with carbohydrate or lipid enzymology, adipose tissue, obesity, diabetes, or human nutrition may find it useful to peruse one or more of the chapters.

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Reproductive Biology

Reproduction of Marine Invertebrates. Vol. 1, Acoelomate and Pseudocoelomate Metazoans. ARTHUR C. GIESE and JOHN S. PEARSE, Eds. Academic Press, New York, 1974. xii, 546 pp., illus. \$38.

Marine invertebrates have served traditionally for examining many of the critical problems in reproductive biology, and there is an enormous literature, spanning a century, on the morphological, physiological, biochemical, and ecological aspects of their reproduction. Yet, until now no attempt has been made to bring together and integrate the information that has accumulated. Arthur Giese and John Pearse have undertaken this task in designing and editing the *Reproduction of Marine Invertebrates*. After years of preparation, volume 1 of this at least seven-volume, multiauthored treatise has appeared. If this initial segment is indicative of the quality to be maintained throughout the series, they will have succeeded amply in providing a valuable compendium of information, significant discussions of the status of knowledge about reproduction in each phylum, and elucidation of fundamental problems concerning reproduction in general.

According to the editors the first volumes will survey all groups of free-living marine invertebrates for the occurrence of and factors that influence asexual and sexual reproduction. Each chapter is being contributed by an authority on the taxon in question, and care is being taken to ensure that both "major" and "minor" phyla are included. One pleasant result of this design is that, regardless of the wide differences in the size of the various groups and the often disparate amounts of knowledge we have concerning their reproduction, it exposes both the information available on and the potential interest to biologists of each phylum (or in the case of exceptionally large phyla, each class). The editors have