and interrelated work is necessary to bring the data up to professional standards; however, the information provided should suffice for use by a high-school student.

The authors have described a true ecosystem by considering each habitat independently over at least a year's time; but the coverage seems too sketchy and lacks the necessary interrelationships between habitats. The epilogue exemplifies this point, in that the authors note many areas they would have liked to cover but for one reason or another were forced to omit.

The appendixes will be quite useful to many professional biologists and, more especially, to students who are beginning research in field ecology. Besides a checklist of vascular plants and vertebrates of Bodega Head and a selected bibliography, there are descriptions of the 19 different methods used by the authors in the course of their studies. For the novice ecologist these detailed descriptions of methods would be quite useful. Much of the equipment can be made inexpensively, and plans are included.

The book covers too wide a spectrum and does not completely satisfy either end of it. On the one hand, the listing of each organism by its scientific name might prove burdensome to the novice; on the other, the inclusion of conversion formulas and other familiar information in the body of the text is distracting to the professional biologist. The person who would most benefit from this book is the high-school student who is becoming interested in ecology.

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Education

SECONDARY SCHOOL CURRICULUM IMPROVEMENT: CHALLENGES, HUMANISM, ACCOUNTABILITY, by J. Lloyd Trump and Delmas F. Miller. 2nd ed., 1973. Allyn & Bacon, Inc., Boston. 463 p. $11.95.

This book can be characterized as a resource for persons who are concerned about curriculum content, organization, management, and evaluation in overall perspective. It summarizes in some detail the major issues and challenges currently facing curriculum workers, either as teachers or as administrators. Its content is that of most education textbooks; but, at least in part, it should be considered as representing strong positions with respect to questions prominent in contemporary curriculum decision-making. These include the title topics and their subordinate issues, such as individualization, grading, alternative learning environments, and technology.

A large segment of the book—11 chapters, accounting for about 200 pages—is devoted to issues and action in the subject areas. I found the discussion of the science curriculum especially weak and outdated. Specifically, the authors' description of the programs of the Biological Sciences Curriculum Study indicates that they recognize no BSCS achievements other than the three so-called versions of 10th-grade biology. This I consider irresponsible and inexcusable in view of the wealth of other materials that BSCS has produced and published. One could be led to assume that chapters dealing with other subject fields are equally weak.

However, with the possible exception of those 200 pages, I found the book challenging and rewarding reading. Although the authors are closely tied to administrative points of view, they are reputable and experienced leaders in curriculum innovation and experimentation. Their arguments are concise and to the point and are not extensively defended, except on the basis of judgments derived from experience and, one presumes, a substantial knowledge of the field. The questionable pages mentioned above might have been better used in scholarly defense of those judgments.

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ELEMENTARY SCHOOL SCIENCE: WHY AND HOW, by Kenneth D. George, Maureen A. Dietz, Eugene C. Abraham, and Miles A. Nelson. 1974. D. C. Heath & Co., Lexington, Mass. 233 p. $4.95 (softback).

The authors have done an excellent job in organizing this textbook for prescience or inservice teachers. It is divided into three main sections, corresponding to decisions a teacher must make in teaching a science lesson: (i) the objectives to be attained; (ii) the methods of attaining those objectives; and (iii) the methods of evaluating what is attained. Subdivision of those three main ideas constitute sections of the book. There is a sufficient amount of illustrative material to enable the reader to grasp the concepts presented. The text is straightforward and readable, and an ample bibliography for each chapter allows the reader to pursue favored topics in depth. Missing are detailed descriptions of "new" elementary science programs. This book and its companion, *Science Investigations for Elementary School Teachers,* make an interesting attempt at guiding the novice through the labyrinth of elementary science instruction.

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Evolution

EVOLUTION, by Charlotte J. Avers. 1974. Harper & Row, New York. 324 p. $5.95 (softback).

This textbook could easily be comprehended by any intelligent adult willing to make the special effort of looking up a number of details. For the college student—the intended reader—the book provides an exceptionally well-balanced and well-written approach to the understanding of this exciting field of study. This would be an excellent textbook for an 8–10-week course in evolution, but it would need to be supplemented for use in a 16-week (semester) course. However, it could be adapted to a 4–5-week segment of a basic course, by wise selection of chapters.

The greatest attribute of the book is the author's treatment of the content in terms of intellectual inquiry and problem-solving. Avers presents ideas as hypotheses supported by hard evidence; hers is a model of scientific thinking and scientific explanation. Furthermore, she has a fundamental insight into the problematic aspects of evolution, and this has led her to the selection of relevant and linearly logical content. Ideas and data flesh out the fundamental concept that molecules (simple or complex) and organisms (simple or complex) evolve wherever a selective advantage of any type accrues to the molecule or organism over shorter or longer periods of time amid changes of population or of environment.

The section on the origin of the universe, although well researched and well written, is irrelevant to an understanding of organic evolution; the book could have begun on p. 27. It is sufficient to postulate conditions under which "living" matter originates, is organized, and develops. The chapter on the origin of life is particularly well done, but the suggested readings could have included the work of Fox, of Miller and Urey, and of Ponnamperuma.

Chapter 4 has clear sections on the evolution of photosynthetic systems and of aerobic respiration. Although some attention is paid to biochemical evolutionary patterns and relationships, this part of the chapter should have been expanded to include the newest work on evolutionary relationships of many organic molecules other than cytochrome C and the hemoglobins. An excellent chapter follows, on prokaryotes and eukaryotes. Another especially good chapter is the one on the evolution of genetic systems.

In the section on basic principles of selection the author points out the tautology of the phrase "survival of the fittest"—a phrase frequently used without a real look at what it means. The fundamental meaning of "fittest" has to