

tivities, references, and subject matter of benefit to both the beginning and experienced teacher. Some of the photographs could be more modern but the line drawings relating to activities and experimental "set ups" are clear and numerous. Topics discussed in this section include the universe, earth, climate, travel, planets, animals, the human body, matter-energy relationship, machines, fuels, light, sound, magnetism, and electricity. Nuclear energy and radioactivity are included in the information. The whole book and especially the basic science information areas are indexed. The appendix includes only pictures of common laboratory equipment but could have been expanded to include other often used data. Nice use is made of the inside cover pages in both the front and rear of the book where metric and English equivalents are printed.

In general, this book, traditional in nature with modern entries, is more than adequate as a textbook for training elementary science teachers and should serve readily as a desk reference for experienced teachers.

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Evolution

STRUCTURE AND EVOLUTION OF VERTEBRATES: A LABORATORY TEXT FOR COMPARATIVE VERTEBRATE ANATOMY, by Alan Feduccia. 1975. W. W. Norton (500 Fifth Ave., New York 10036). 176 p. \$6.95.

This manual provides an excellent alternative to the classical comparative anatomy laboratory: a presentation of the major features of the morphological evolution of the vertebrates without reams of minute detail. Through the laboratory work the students are able to follow the development of general trends of evolution as displayed in anatomical characteristics; they are allowed an overall picture of vertebrate evolution unclouded by a maze of trivial memorization. Feduccia's intent is to present a general picture, and he does this quite well.

There are numerous other points in the book's favor. Important terms are in bold type and are defined upon their first appearance. Illustrations throughout the book are uncluttered and clearly labeled. There is an appendix of terms used in dissection and an excellent diagram illustrating anatomical planes and directions. A second appendix contains a brief classification of the vertebrates. The book also has a good list of references and a comprehensive index.

I found two shortcomings in this lab manual. First, the dissection instructions are too brief. Feduccia says this is

to allow students the freedom to develop their own methodology. This is fine, but students need some general suggestion as to where to cut and what to remove—more procedural guidance than the book gives. Second, the descriptive text and accompanying illustrations are frequently on different pages. This requires a lot of disruptive page flipping while trying to do the dissection.

Feduccia does present a viable alternative to the classical comparative anatomy lab, one that would be most useful for presenting a course on the general trends of vertebrate anatomical evolution.

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BIOLOGY: EVOLUTION AND ADAPTATION TO THE ENVIRONMENT, by Mahlon G. Kelly and J. C. McGrath. 1975. Houghton Mifflin Co. (110 Tremont St., Boston 02107). 567 p. \$12.95 hardback.

This is a well written, clearly illustrated general biology book suitable for use with introductory college nonmajor biology classes and with upper level high school biology students. Because of the clear coverage of population growth, competition, and community energetics, this book would also be a useful resource for most high school libraries.

The book is a very creative attempt to introduce students to evolution as an explanatory tool in biological thought. The book first covers the mechanisms of evolution, then briefly examines aquatic, terrestrial, and physiological adaptations. This takes the place of the phylogenetic survey and organ system overview of the more traditional biology textbook. Next, genetics, population genetics, and speciation are covered, followed by a brief introduction to cellular chemistry, energy, photosynthesis, and respiration. This material is used as the transition into ecosystems, biogeochemical cycles, and nutrient flows. Well illustrated chapters on population growth, population interactions, and populations in communities and biomes follow. The book concludes with chapters on the evolution and ecological roles of man.

The authors have used special inputs of supplementary ideas in most chapters through the use of spotlight pages and many interesting illustrations. Each chapter has a selected readings list that includes both paperback editions and *Scientific American* offprints.

Possible shortcomings include the lack of chapter reviews and thought questions about the chapters. Some of the chapters tend to be somewhat longer than many students will be used to. Hopefully, the authors will also design a laboratory manual to accom-

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Edited by
Arnold B. Grobman

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pany the text, which would lose something if paired with a more traditional type of laboratory manual.

I recommend the book to biology teachers at all levels as an idea resource on the use of the unifying theme of evolution through natural selection and as a thoughtfully written biology book.

Robert Patterson
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Genetics

OUR FUTURE INHERITANCE: CHOICE OR CHANCE? by Alun Jones and Walter F. Bodmer. 1974. Oxford University Press (200 Madison Ave., New York 10016). 141 p. \$13.00 hardback, \$4.00 softback.

This book is a thorough presentation of the scientific, social, ethical, and legal implications of recent advances in genetics and biology in Britain and the United States. Topics reviewed: artificial insemination by donor, artificial fertilization, genetic screening, and selective abortion, organ transplantation, genetic engineering and cloning, and social concerns for biological research.

It was written primarily to educate the public in recent developments in biology under the direction of a multidisciplinary committee (working party) from the British Association for the Advancement of Science, but it will surely find a wide audience among a variety of biological scientists and students as well.

Each topic mentioned above is thoroughly reviewed as a separate chapter with adequate illustrations, tables, charts, and photographs. The final chapter is particularly significant as it reviews each topic from the viewpoint of social concerns for these biological developments. Many questions are posed and possible dangers highlighted, but the authors have chosen to allow the readers to draw conclusions for themselves. Nevertheless, the message comes through most clearly that there is a strong need for public awareness of some of the new biological research, particularly in genetics, and at the same time there is a corresponding need for restraint in certain areas by the researchers themselves.

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HUMAN GENETICS, by A. M. Winchester. 2nd ed., 1975. Charles E. Merrill Publishing Co. (Columbus, Ohio 43216). 221 p. \$3.95 softback.

This book is aimed at "the average person with little background in the sci-

ences." In size and scope, it is rather more comparable to the McKusick book than to the more extensive works by Stern and by Sutton. It is probably intended as a textbook for a nonmajor course in human genetics or human biology, for which it would be adequate.

Although the book is concise, its organization logical, and its technical demands minimal, it may not serve its intended audience well. The approach is classical: the principles of heredity are presented and are fleshed out with standard examples of human genetic situations. Unfortunately, this approach might miss the mark for the general student who has become aware of the impact and excitement generated by dramatic advances in modern genetics, and who has come to recognize the very personal stake all people have in human genetic advance. Because a number of students have presumably come to the discipline of human genetics primed with bits of information about human heredity which led them to seek a more vigorous and methodical presentation of the subject, it seems logical that their interest in learning basic genetic principles would be stimulated by an early introduction of well-chosen examples of human situations. Although this book follows a standard model for presenting the information and is clearly written, it seems to run counter to this logic.

There are certain peculiar omissions in this work. There are too few descriptions of particular genetic situations in other organisms which might have profound relationships to the human condition, and there is no extended discussion about ethical considerations of genetic advance. Amniocentesis is presented very briefly as a modern technique, but the full extent of its usefulness is not discussed. Nor are cloning or genetic engineering dealt with.

The text is followed by a short glossary, which is not especially useful, and by an index, which is adequate. There are no literature references.

This is one kind of introduction to human genetics. It has clarity and brevity as its strengths. It does not overstate. But it misses the excitement of the field.

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History and Philosophy

STUDIES IN THE PHILOSOPHY OF BIOLOGY, ed. by F. J. Ayala and T. Dobzhansky. 1974. University of California Press (2223 Fulton St., Berkeley 94720). 412 p. \$22.50.

There has long been controversy in biology between the reductionist and the antireductionist schools of thought. This book is a very enlightening series of essays by distinguished philoso-

phers and scientists examining the different domains of reductionism.

The authors present a variety of viewpoints of the ontological, methodological, and epistemological dimensions of reductionism. The ontological studies explore the question of whether physicochemical entities and processes form the basis of living systems. The methodological treatment answers questions regarding the strategy for research and the acquisition of knowledge. Epistemological studies examine the nature and origin of knowledge and how reductionism bears on comparisons of laws and theories in different branches of science. The task undertaken is enormous and cannot be covered in one volume, but undoubtedly this is one of the most distinguished studies on the topic.

To anyone interested in the nature of science and to scientists concerned about priorities in biological research of the future, this book should be a valuable addition to the library.

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Physiology

BASIC SCIENCE AND THE HUMAN BODY, by Stewart M. Brooks. 1975. C. V. Mosby (3301 Washington Blvd., St. Louis 63103). 499 p. \$11.95.

Several unique aspects of this book make it an excellent text for an introductory course in human anatomy and physiology for nurses and paramedics. The first four chapters review the needed chemistry, physics, and microbiology and form a useful student reference. The material in these chapters is somewhat detailed and occasionally irrelevant to the main topic of the book, but the material can be easily skipped by well-prepared students.

A classical, system-by-system, approach is used, with the addition of considerable amounts of material on disfunctions and diseases of the system under discussion. This sort of material is often added to lectures by the instructor; now the student can have a written reference to the most common diseases and problems of the human body, in reasonably untechnical language.

Each chapter ends with 50-100 questions on the general topic of that chapter, many of which force the student into outside references, or to other chapters. Selected questions would make a good study guide for the chapter, but great care must be used to pick questions that can be answered with the material in the book.

Rather than conversational, the style is terse, pithy, with heavy use of precise anatomic vocabulary. Thus, the reading is difficult but blessedly short. For example, the stomach is described