

greatly in showing the students the interdependency of scientific endeavor. Along with this, the guide questions and problems are definitely inquiry-oriented and should stimulate discussion and thought. To supplement this and to guide continued study, the related readings have been revised and updated.

Finally, to a large extent, the two general areas of greatest concern in the original edition, chemistry of life and genetics, have been reworked and rewritten. The section on hereditary materials has been moved up to chapter eight to give the students a basic understanding of heredity early in the course and the population genetics section has been simplified and revised. The materials still allow for an expanded study where desirable but are presented in a much simplified form. The chemistry section has been greatly simplified without losing the very important relationship between chemistry and the life processes.

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BIOLOGY, 2nd Ed., Elsbeth Kroeber, Walter H. Wolff, and Richard L. Weaver, 646 pp., \$7.60, D. C. Heath and Company, Lexington, Massachusetts, 1969.

This biology text is more of the almanac orientation than the concept or principle orientation. After a typical brief reference to the scientific methods, the book pays little heed to them. While the simplicity of expression is commendable, the concomitant shallowness of substantive information precludes usage with brighter students.

The organization is not unusual except for a group of field trips at the very beginning of the book. Evolution and homeostasis as permeating principles are found only in a short didactic treatment on evolution in the unit on the history of living things. A unit on Bacteria and Health is interjected between Behavior and Reproduction.

The format is rather attractive and colorful albeit often cluttered. The spatial split of the explanations under photographs and diagrams as a two-column format makes for difficulty in reading. The illustrations are of inconsistent quality—diagrams clear and good; color photographs especially attractive, but many black and whites are outdated. Tables are somewhat unusual and interesting. The index lists items hardly useful to the reader, e.g., male ant, male deer, and male stickleback.

The end of each chapter "What have you learned" section is of questionable utility; the act of summation is something a student should learn to do himself. "Useful Words in Biology" section may be of value. "Test Yourself" section is strictly an information ac-

cretion unit and relates neither to history of ideas nor modes of inquiry. "Do it Yourself" section is hardly challenging to the normal, inquisitive 10th grader. "Adventures in Reading" is rather good, giving publisher and date, which many high school texts fail to do.

This text lacks the scientific rigor, precision, and detail so as to preclude its classification among the better books in biology.

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LABORATORY INVESTIGATIONS IN THE PRINCIPLES OF BIOLOGY, Thomas R. Mertens and Alice S. Bennett, 178 pp., Burgess Publishing Co., Minneapolis, Minnesota, 1968.

The goals of this laboratory manual are commendable. The laboratory investigations are narrowed to 20 in number and illustrate the most fundamental principles in biology. The investigations minimize the use of preserved material and thus provide the dynamism of a modern program in biology rather than the pathetic, dull, encyclopedic engagement with fragile lifeless specimens.

The experimental approach is frequently used where the student is engaged in elements of the scientific process rather than in information accretion. In general, although the student is actively involved in evaluation and observation of biological structures and events, they are not engaged in any really open-ended inquiries or investigations. There is still a good deal of "telling" in the context of each investigation.

The question of what is relevant and irrelevant in biological education at the first level courses is moot. This particular lab manual is remarkably free of the ancillary, irrelevant questions remotely related or non-related to the investigation at hand—a condition characteristic of many laboratory manuals. This manual does have fewer didactic expectancies of the type (p. 72) "How many layers of cells do you see?" "What are the names of these layers?" as compared to statements (p. 75) "In view of these considerations, where would you expect the egg to be fertilized?" and (p. 106) "What hypothesis do you think best explains the data you have obtained?" [italics mine]. It has a wholesome amount of drawing and labeling activities, a procedure which does sharpen observational powers albeit this objective constitutes the major activity of students using other manuals.

The selection of investigations is rather well-balanced so that students get a wide range of biological experiences from straight anatomical studies to mathematical considerations of genetic problems. Obviously critics will find

gaps in the manual and each critic has his own territorial rights to protect, but this reviewer is sympathetic to the boundary conditions imposed by the selection of 20 investigations.

Illustrations are rather good except for Figure 13.4 on ascospore arrangements and Figure 17.2 on the human skeleton. Both could be enlarged to be more readable to the student.

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MASTERING MODERN BIOLOGY, George I. Schwartz and Russell C. Oakes, 502 pp., \$1.90, Oxford Book Company, New York, 1968.

A paperback in general high school biology and written by authors who have had BSCS writing experience. It is an appropriate team, consisting of a high school teacher and a science education specialist, and both serving as BSCS consultants in its early days.

Thus the book, as the authors state in the Preface, relies greatly on BSCS experience. The unit titles hint at this: unity and diversity, living things at work, continuity of life, and evolution and conservation. The illustrations are line drawings and the chapter-end materials are rich in various types of questions and problems.

However, the book is frankly for review purposes, presumably for exams. Thus, the "inquiry approach" is absent and the intent of the authors is plainly to present an aid for learning the factual basis of the "new" biology. Teachers committed to the inquiry approach will probably look upon this effort most skeptically. But I would warrant that the best evidence of whether they are really pursuing the inquiry approach would be to measure the sales of this book and similar ones during the year. At least, the type of evaluation instruments of biology teachers always are reflected in the market for various learning materials. This should have a big market.

BIOLOGY, 2nd Ed., John Kimball, 776 pp., \$9.95, Addison-Wesley Publishing Company, Reading, Massachusetts, 1968.

A handsome text for the advanced student at the secondary school level or for the undergraduate student, but in any event, aimed at the superior student in transition between high school and college. There is no gaudy use of color, but there is a liberal display of illustrative material.

The book is large and detailed, inclusive of much new material, but primarily at the expense of taxonomy and morphology. One of the really interesting features is the chapter-end material, especially the questions. The organization is on functional lines and every attempt is made to hit the Advanced Placement syllabus.