

Physiology

ANIMAL PHYSIOLOGY, by Knut Schmidt-Nielsen. 3rd ed., 1970. Prentice-Hall, Inc., Englewood Cliffs, N.J. 155 pp. \$2.95 softback, \$6.95 hardback.

Schmidt-Nielsen, a highly regarded animal physiologist, has done an excellent job of putting extensive and complicated information into simple terms. This small book, in the Prentice-Hall "Foundations of Modern Biology" series, is in its third edition—a fact that reflects not only its popularity but also its accuracy and its scientific acceptability. Physiologic processes are interestingly discussed, using a comparative approach; the human circumstance is always included along with fascinating insights into the functioning of certain invertebrates and lower vertebrates. There is apparent a masterful job of selecting those salient physiologic mechanisms and functions that have intrigued the professional physiologist as well as the layman and student.

I believe that the topics encompassed by this little volume would be those that the majority of physiology and biology teachers would wish to include in any discourse or presentation on animal physiology. The author organizes physiology under seven concepts: food and energy, oxygen, temperature, water, movements, information, and integration. The orthodox physiologic organ systems are skillfully interwoven with these major principles. Minimizing technical terminology, the writer nevertheless addresses himself to the important topics and concepts of modern physiology, such as countercurrent mechanisms, nerve-muscle action potential, osmolality, postsynaptic potentials, and neuroendocrine integrative processes. Lucid diagrams and simple tables supplement the perspicuous and lively writing style. Especially helpful is the utilization of footnotes to aid the non-technical reader in understanding units of measurement and certain quantitative material, such as graphs. For example, when millivolt or millisecond is used, it is explained in a footnote and when metabolism and Q_{10} are discussed, a footnote elucidates the reason for using logarithmic or semilogarithmic plots.

A final and very important observation should be made in regard to this physiology book. It does not avoid the important, the up-to-date, nor the abstruse material; however, it does make it clear enough and pleasing enough for application at the high school level or the popular level. It is this reviewer's opinion that a remarkable objective has been attained with this third edition; namely, a publication with appeal for advanced as well as beginning students of physiology.

Raymond E. Henzlik
Ball State University
Muncie, Ind.

Textbooks and Programmed Materials

THE SPECTRUM OF LIFE, by Harold A. Moore and John R. Carlock. 1970. Harper & Row, Inc., New York and Evanston. 822 pp. \$9.20.

The Spectrum of Life biology program consists of a student textbook and a laboratory manual. Teacher's editions of the text and the manual are available, and there is also a teacher's handbook. The student text is colorfully illustrated with carefully selected, attractive photographs. The drawings are well done. A fast "thumb through" leaves a very good impression, but careful interrogation reveals some very serious drawbacks.

The text is interesting to read, and a lot of effort apparently has gone into trying to humanize the material. This humanization is accomplished by the use of short biographies of some of the "prime movers" of biology. These sketches are designed to make the study of biology appear as a human endeavor and not as a mechanistic enterprise for gathering data for data's sake. The authors try to show that biology is a human pursuit of nature's secrets. *The Spectrum of Life* probably is more successful in humanizing biology than most high school textbooks. It should be pointed out that the biographies of the "prime movers" have not been developed in a social context of the period in which they did their work.

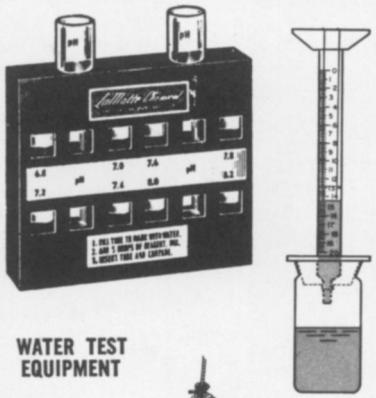
The text is organized on the principle of beginning with familiar information and moving toward the unfamiliar. The laboratory manual has perforated sheets; this provides a teacher with greater flexibility in the use of the manual. For example, one sheet can be removed for the teacher to examine. This permits a teacher to look over the completed laboratory activities without tying up the entire manual. Completed sheets can be placed in a loose-leaf binder for future reference. Laboratory activities are of four categories: probe, conformation, technique, and aids to study. The probes are open-ended activities. Conformations and techniques serve the purposes that their names imply. Aids to study are "structured lessons which will improve your understanding as you are guided to a logical sequence of information." Also provided in the laboratory manual are punch-out sheets of two-dimensional models. These punch-outs can be used at several points in the book for developing models of chemical structures of the many compounds mentioned in the program.

Several liabilities of the *Spectrum of Life* are serious enough to be mentioned. The text is lengthy. The length is going to scare some students before

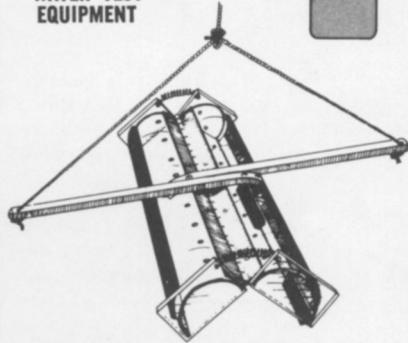


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