

PHOTOPERIODISM IN ANIMALS, Donald S. Farner, 36 pp., Subscription \$4.00 yearly, D. C. Heath and Company, Boston 16, Massachusetts, 1964.

Another one of the BSCS pamphlet series. The aspect of photoperiodism as it is exemplified in plants is rather well discussed in a great deal of literature. However, the implications of this phenomenon for animals is not as widely known. This pamphlet fills a real void in this area, and the author has skillfully woven a great many illustrations to prove his point. Obviously, birds are a most important case in point, and the author makes the fullest use of this excellent example of the effect of photoperiodism. However, there are many citations to other examples from other parts of the animal kingdom. All in all, this is one of the better booklets of the BSCS series.

Human Biology

APPLIED HUMAN BIOLOGY FOR NURSES, William C. Fream, xi 408 p. \$5.75, Williams and Wilkins, Baltimore, 1964.

This book was written for student nurses in the United Kingdom, and its market in the United States will be somewhat limited. Physiological processes are discussed in a clear cut, elementary manner, and some diseased conditions are described along with their relation to normal physiology. The author has attempted to give a biological slant to the book by adding discussions of the comparative physiology of organisms other than man. These parts of the book tend to be very elementary and suffer from oversimplification.

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HANDBOOK OF PHYSIOLOGY. SECTION 4: ADAPTATION TO THE ENVIRONMENT, D. B. Dill, Section Ed., ix 1056 p. \$32.00. American Physiological Society, Washington, D. C. (Distributed by Williams and Wilkins, Baltimore, Md.) 1964.

The *Handbook of Physiology* will, when completed, be a comprehensive survey of present-day physiology. The first three sections were devoted to neurophysiology, circulation, and respiration. Other organ systems will be considered in subsequent volumes. The volume reviewed here has an approach that is different from those that appeared earlier in that it deals with functional entities such as the adaptation to temperature, pressure, and other environmental factors.

There are sixty-three chapters, each written by one or more specialists. The first three chapters give a general background. Of these,

the chapter by C. Ladd Prosser on theoretical aspects of adaptation is particularly good. The fourth chapter is on the cellular level of adaptation followed by eleven chapters on organ-systems in adaptation. An example of one of these is the one on adaptation in the cardiovascular system by S. M. Horvath and C. D. Howell. It covers responses to heat, diving (the hypodynamic states), exercise, high altitudes, and cold.

The rest of the volume is devoted to the principal environmental factors and the adaptive processes in representative organisms. For example, there are eight chapters on terrestrial animals in cold. The representative animal groups in cold environments that are discussed are the arthropods, reptiles, birds and mammals, hibernators, primitive man (two chapters), and modern man in polar regions. Similarly, there are groups of chapters treating terrestrial animals in dry heat and in humid heat, animals in aquatic environments, animals in toxic environments, animals at high altitudes, and others. Each chapter has an extensive bibliography, and there is a comprehensive index to the entire volume.

This section should broaden the audience for the *Handbook of Physiology* to include animal ecologists and other zoologists who had not expected this kind of an approach to physiology in this treatise. As a reference on adaptation and as a source of information on a wide range of topics, this book should be on the shelves of college and university libraries.

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RETENTION OF FUNCTIONAL DIFFERENTIATION IN CULTURED CELLS, Wistar Institute, Symposium Monograph No. 1, Vittorio Defendi, Ed., 116 p. \$5.00, Wistar Institute Press, Philadelphia, 1964.

THE THYMUS, Wistar Institute Symposium Monograph No. 2 Vittorio Defendi and Donald Metcalf, Eds. 145 p. \$5.00, Wistar Institute Press, Philadelphia, 1964.

The first of these monographs is a series of papers on differentiation presented in honor of Margaret and Warren Lewis whose work on tissue cultures has extended throughout much of this century. Following a tribute to the work of the Lewises, there are ten papers on differentiation of cells in tissue cultures. Hormone synthesis, gene action, antibody response, and other cell functions are among the subjects treated.

The second monograph deals with modern research on thymus function. The relation of the thymus to other lymphoid organs and its im-