

Spurr's innovative and critical remarks. He covers six general levels of academic degrees in higher education: associate, bachelor, master, intermediate graduate, doctor, and the postdoctorate, or higher doctoral. He recommends that the fewest possible degree titles should be given general usage within each level. He believes it would be desirable to require the recognition of the associate degree en route to the baccalaureate, so that the associate degree would acquire greater status. For the bachelor's degree he recommends a single degree designation—bachelor of arts—for liberal-arts colleges; for universities he recommends the addition of bachelor of science. For the master's degree he recommends that, on completion of the baccalaureate, students be admitted only as candidates for the master's degree. He is consistent in recommending that an intermediate degree be granted on the completion of the general-studies phase of the doctoral degree, thereby formally separating the general-studies phase from the dissertation phase. He looks upon the Ph.D. as a good degree and recommends that it be kept broad in scope. He maintains that the preparation of college teachers could best be carried on through a shortening and better structuring of the Ph.D. rather than by making another degree, such as doctor of arts. In recognition of post-doctoral studies he recommends a consideration of a new degree: doctor of natural philosophy.

Spurr suggests a number of general principles for developing degree structures and emphasizes the following: (i) degree titles should be kept as low as possible; (ii) there should be flexible time requirements; and (iii) each degree should mark the completion of one stage of academic progress.

College and university teachers concerned with a review of degree programs, general education, or routine academic considerations will find that this book provides innovative approaches to degree principles and structures.

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Environmental Biology

ENVIRONMENT, POWER, AND SOCIETY, by Howard T. Odum. 1971. John Wiley & Sons, New York. 339 p. \$5.95 soft-back, \$9.95 hardback.

This is a provocative book, certain to be controversial. Tom Odum always "thinks big," and here he sets his sights on finding nothing less than a principle common to organisms, ecosystems, politics, economics, religion, and ethics. The common denominator is power, defined in terms of rate of flow of useful energy. Power is shown to be all-pervading, by a series of flow dia-

grams wherein a single symbol bears many names; for example, almost identical diagrams describe the maintenance of low temperature in a refrigerator, of an ordered biologic system, of a crystal, and of a social system. In short, this book is an extended argument based on the analogy of electric circuitry and is subject to all the criticisms that may be applied to analogic reasoning.

Much of the basic ecology discussed here is well known to biologists; some of it is often printed in basic college-biology textbooks. Most biologists will probably agree with Odum's ecologic conclusions although they may quarrel with his reasoning; but it is the extrapolation to economics, society, ethics, and a naturalistic theology that they—and social scientists and philosophers—may consider naïve, simplistic, offensive, or a tour de force. This is a missionary work—the full flowering of ideas that appeared at least as long ago as 1955—and it deserves the thoughtful attention of mature biologists, teachers, and students. It offers a great deal to contemplate and would be an excellent book for a college senior seminar. However, it cannot be recommended, as a publisher's blurb suggests, as an introduction to biology or ecology for students at any level.

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THE INFINITE RIVER, by William H. Amos. 1970. Random House, New York. 281 p. \$6.95.

This book describes the hydrologic cycle in nontechnical terms, and no scientific names are used. The author, who is a biologist, pays close attention to the organisms associated with each phase of the cycle; considerable attention is paid to the physical environment as well. Geomorphology, bioenergetics, and species' histories also are covered. Purposely, the author describes freshwater and marine conditions as they should be, and only passing mention is given to worldwide aquatic pollution.

Amos's style is much more prosy and readable than that found in many other popular scientific works, except for the inappropriateness of most of the poetic chapter-introductions. The author's extensive knowledge of and love for aquatic biology is obvious. The chapter on estuaries, entitled "The Touch of the Sea", is one of the finest accounts I've read.

The jacket states that the book is for the general reader, but several features have been omitted that would help this audience. Since the book contains only one photograph and no diagrams, the reader may be confused if he lacks field and laboratory observations of aquatic organisms: it is difficult to visualize sturgeons, drills, and hydroids if one has never seen them.

The reader may be inspired to follow up this book with others on the subject. Unfortunately, no hints are given about what to read next or where centers of aquatic biology are to be found. And, in spite of the great wealth of detail in the text, the book lacks any sort of index.

This well-written, informative book deserved better treatment from the editors who, I assume, were responsible for the omission of photos and of indices to the subjects and to the appropriate literature. With these inclusions, the book would have been even more useful and would have deserved a higher price.

The book is well suited to high school and college students who are interested in ecology and, in particular, in aquatic biology.

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THE SECRET LIFE OF THE FOREST, by Richard M. Ketchum. 1970. American Heritage Press, New York. 111 p. \$7.95.

This short book is a well-written account of the ecology of the forest, showing the close interdependence of the flora and fauna. It can be easily understood and appreciated by anyone.

The author begins by showing how today's flora culminates a process that started billions of years ago with formation of the soil. He shows the relation of the soil, water, sunlight, and carbon dioxide to the life of plants, stressing the dominant plants—trees. Seeds, seed dispersal, roots, bark, and leaves are clearly explained. These topics, as well as others, are well illustrated.

The reader is led through the six principal forest zones, with their varied climate and soil conditions. He is enabled to understand what was here 400 years ago and to comprehend the destruction of our country's forests. The final section deals with the forest industry and the government, their use and misuse of the forest, and the belated attempts to salvage and comprehend the delicate web of life.

The illustrations (many from St. Regis Paper Co. advertisements) are in the American Heritage tradition. This fascinating book should delight both the ecologist and the layman.

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Genetics

GENETICS OF THE EVOLUTIONARY PROCESS, by Theodosius Dobzhansky. 1970. Columbia University Press, N.Y. 514 p. \$10.95.

When Dobzhansky writes, biologists