agree with both the approach and the emphasis of this book.

In the introduction the authors state that animal behavior is an analysis of the potentialities of the nervous system and that to understand behavior we must look first to certain aspects of the nervous system. I feel these statements are unnecessarily restrictive, especially when interpreted as narrowly as these authors do. Six of the nine chapters focus primarily on phylogenetic differences in nervous-system morphology. The quality of these presentations is good, but the relationship of the morphology of the nervous system to behavior seems more remote than does the relationship of that morphology to evolution. The final three chapters of the book have to do with stereotyped behavior, learning and intelligence, and social behavior. These chapters are entirely behavioral in emphasis and approach and give some validity to the title of the volume. The section on instinct is a model of clarity in an outstanding chapter. The topic of social behavior is treated too briefly for my taste, but obviously many matters cannot receive the treatment they would receive in an expanded work.

The authors are always mindful of their audience. The book is psychologically and physically attractive. It has wide margins for note-making, and the margins carry a topical outline of the text. The illustrations are good; most are in two colors.

Animal Behavior has both good and not-so-good features. I doubt that most behaviorists would find it a satisfactory introductory text, because of the excessive emphasis on comparative anatomy of nervous systems and the scant attention given to the comparative behavioral functioning of those systems.

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Botany

CONTROL MECHANISMS IN PLANT DEVELOPMENT, by Arthur W. Galston and Peter J. Davies. 1970. Prentice-Hall Inc., Englewood Cliffs, N.J. 199 pp. $3.95 softback, $6.95 hardback.

Advanced students of plant physiology, molecular biology, and plant and animal development will find here an engaging analysis of several concepts and problems of plant morphogenesis. This work is concerned primarily with how a green plant controls its activities and attunes its development to nature's seasons. Focusing on stimuli that control the developmental cycle of higher plants and the mechanisms through which they probably act, the authors examine the phytochrome system and the action of several plant hormones and inhibitors. Applications to practical problems are suggested throughout. Excellent illustrations and a rich collection of references enhance the book's usefulness to biology teachers. Teachers who are enthusiastic about the process of science can use material from this book to illustrate what is accomplished by the combined efforts of chemists, physicists, and biologists. If this is typical of other titles in the "Foundations of Developmental Biology" series, secondary and college teachers of biology will find it worth their time to examine the companion volumes.

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THE BIOLOGY OF HIGHER CRYPTOGAMS, by William T. Doyle. 1970. Macmillan Co., New York. 163 pp. $4.95 (softback).

The higher cryptogams include the bryophytes, psilopsids, lycopsids, sphenopsids, and ferns. This assemblage of spore-producing plants is treated as a natural evolutionary group. In presenting the life cycle of the group, the author describes the general morphology and function of the essential plant structures, leaving the anomalies and accessories to the more detailed textbooks in plant morphology. Each chapter is a skillful amalgam of classical morphology and current research in experimental plant development, all presented with an evolutionary overtone. Basic unresolved morphologic problems are pointed out to the reader. Many references are made to investigations utilizing axenic cultures. The discussions of apogamy, apospory, spore development, and spores are outstanding. One chapter is devoted to the morphologic adaptations of the higher cryptogams to their predominantly terrestrial existence. A useful summary of each higher cryptogam group provides a brief account of fossil forms; major characteristics, including those with particular evolutionary significance; and some little-known but interesting details about the group. The final chapter is a progress report on current topics relating to plant development—especially to the role environmental factors play in regulating the expression of genetic potential during development. Special topics include sex determination and sex expression; regulation of embryo development; bud initiation in mosses; regulation of sporangium induction; and spore germination.

This book is highly recommended for students of plant morphology and development. Developmental biologists who are not familiar with the research potential of some of the higher cryptogam systems should find the book informative and thought-provoking.

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SEAWEEDS AND THEIR USES, by V. J. Chapman. 2nd ed., 1970. Barnes & Noble, Inc., New York. 304 pp. $14.50.

This is the most recent, comprehensive, and up-to-date volume on the subject. Written by a well-known algologist, it deserves the attention of botanists, marine biologists, and persons interested in the living resources of the seas.

The first of 10 chapters is a general review of the occurrence and distribution of seaweeds of economic importance. (More detailed information on various groups and species of algae is scattered throughout the text.) Special attention is given to the early kelp industry, to iodine and potash production, and to algae as food for man and domestic animals. The tables of chemical analyses are of great value. Uses of algae as manures and fertilizers are discussed at some length. (The work of W. A. Stephenson—see the review of his *Seaweed in Agriculture and Horticulture, in Choice,* 6 [4]: 535—is an important and exciting supplement to Chapman's treatment.)

A whole chapter is devoted to laver and Irish moss; another, to agar-agar. Here again are useful tables on production and physical and chemical composition. The occurrence of algae from which algin and alginates are derived, together with data on occurrence, properties, and uses, is reviewed at length. Industrial, medical, and miscellaneous uses are covered in considerable detail. The world's supplies and potential supplies are estimated and the techniques used in making surveys are described.

The book has 66 tables and 56 figures, a 30-page bibliography listing about 1,200 papers, a five-page author and person index, a five-page plant index listing more than 150 genera, and a seven-page subject index.

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AN INTRODUCTION TO PLANT BIOLOGY, by Ross H. Arnett and Dale C. Braungart. 3rd ed., 1970. C. V. Mosby Co., St. Louis. 492 pp. $9.75.

This textbook is designed for a beginning college botany course but should prove useful as a reference book for high school teachers as well. According to the preface "complete rewriting" was deemed necessary because of the wealth of information available since 1965, when the second edition appeared. It is true that the organization of the material has been considerably revised, but it is disturbing to see passages lifted verbatim from previous editions and simply inserted under new headings, where their relevancy is questionable. For example, in the chapter entitled "Adaptive Structures