through territorial marking. Also certain functions described, such as scratching and marking, are far more complicated and variable in reality than the text indicates.

Although this book is written basically for the behaviorist there are snippets throughout which will interest nonspecialists, pet keepers, and the like. For example, there is an exciting description of a provoked attack by wolves on the author, as well as descriptions of extrasensory perception, love in wolves, and the problems of raising wolves in the home. Of more significance are the clear distinctions drawn between tameness and domestication and the account of wolf-handler relationships.

All in all, the author has presented the comparative aspects of canine behavior in an excellent manner by the use of precise definitions and fine photographs. Although the experienced behaviorist may be irritated by the occasional bold statement and passage where discussion is inadequate, I think this is an essential book for students and others embarking on studies of canine behavior, since the author has indeed provided a framework for further research.

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Production Problems

Aquaculture. The Farming and Husbandry of Freshwater and Marine Organisms. JOHN E. BARDACH, JOHN H. RYTHER, and WILLIAM O. MCLARNEY. Wiley-Interscience, New York, 1972. xvi, 868 pp., illus. $37.50.

It is usual in referring to the field of aquaculture to tout its role in feeding the starving populations of the world. This book does not do that. Its 43 chapters describe and discuss techniques and methods for culture of animals ranging from common carp and a number of other fresh- and saltwater fishes to various crustaceans and a number of species of mollusks. Even short chapters on the culture of seaweeds and edible freshwater plants are included. Each chapter attempts to follow a reasonably standard format to include background information on the species under consideration, specialized techniques that have been found suitable for particular areas, statistics on yields, harvests, and marketing, and thoughts on parasites, diseases, and difficulties. The treatment of individual species, depending largely upon information available from other sources, varies considerably in breadth and depth, but major references at the conclusion of each chaper will presumably enable the reader to pursue the matter in as much detail as he finds desirable. The authors have been liberal in their inclusion of tables and figures, many of which provide vital information concerning the yield that can be expected from a program of a particular size over a specific period of time. The appendix, "Pond siting and construction," should be extremely useful to those who are interested in beginning exploratory studies slightly below the level of a commercial venture. The index of persons, places, and institutions currently working in aquaculture should be invaluable to those who wish to communicate in search of additional information. There are also indexes of names of plants and animals and of subjects discussed.

The opening chapter, "General principles and economics," presents a candid consideration of the state of the art without beating the drums. Although the volume will not be of great use to scientists who are already involved in aquaculture, it provides for the first time a reasonably complete source of information from which a host of others can learn about the field. One hopes it will be read by those government agency officials who continue to claim that aquaculture will soon solve the world's food problems.

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Salt-Adapted Plants

Biology of Halophytes. YOAV WAISEL. Academic Press, New York, 1972. xiv, 396 pp., illus. $18.50. Physiological Ecology.

In this monograph Waisel has drawn from an old and varied literature and from his own experience to attempt the first comprehensive synthesis in English of the biology of plants which grow and complete their life cycle in habitats of a high salt content. These plants, the halophytes, have amused plant biologists for generations while more practically motivated efforts have been directed to the salinity responses of salt-sensitive, agriculturally useful species. At a time when priorities are being reassessed and the central place of halophytes in valuable coastal marsh and inland saline ecosystems is increasingly appreciated, it is sobering to be reminded by the author that not much is known of halophytes.

The book begins with outlines of the sources of salinity and of the formation of salines and concludes with ecological notes on marine and terrestrial halophytes. Ranging across many aspects of the biology of diverse species the author naturally uncovers little which is adequately documented. The bulk of the book is devoted to the physiological and anatomical features of halophytes, and it is at this fundamental level that important questions are easier to specify. Osmotic adjustment, for example, is central to the water relations of halophytes, yet it is not clear how the ion absorption processes of halophytes are regulated to achieve this adjustment. Much attention has been given to the salt-secreting glands in leaves of halophytes, but, as the chapter dealing with these shows, the activity of glands is poorly correlated with overall salt relations of the shoot. There is a growing consensus that enzymic proteins of halophytes, unlike those of halophilic bacteria, are not particularly insensitive to high levels of electrolytes and show no salt-activation phenomena which distinguish them from enzymes of other plants. It seems possible that the regulation of ionic activity in metabolic compartments is an important feature of halophytes, yet specification of compartmental ionic activity remains extraordinarily difficult.

These are but a few of the "gaps in knowledge" which the author has undertaken to expose. He might have been more successful in doing so if the data had been presented in a more ordered way and if more critical assessment had been offered. It is often difficult to establish a balance between critical observations and marginally relevant extrapolation. Inconsistent arguments sometimes appear, as for example in the double standards adopted in the application of Lineweaver-Burk plots to ion absorption and to plant competition. For these reasons *Biology of Halophytes* may be unsatisfactory as a text, but it should stimulate physiologists and ecologists to repair the threadbare fabric of halophyte biology.

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