

coveries" made by Lysenko's followers were forgeries. My personal opinion (Medvedev does not raise this issue) is that Lysenko himself was not a deliberate faker—he was a fanatic who deluded himself as well as others. Some of his "discoveries" were too far-fetched and useless to be worth forging. An example is his declaration that cuckoo chicks arise by a kind of mutation from songbird eggs. He cannot, however, escape the responsibility for having created a milieu which invited and glorified forgeries. This is what academician Sakharov meant by "infamous pages in the development of Soviet science." Medvedev deserves admiration for his courageous and scrupulous recording of the contents of these pages for his contemporaries and for history. Those who fail to learn from history are bound to repeat it.

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## Epiphysis Cerebri

**The Pineal.** RICHARD J. WURTMAN, JULIUS AXELROD, and DOUGLAS E. KELLY. Academic Press, New York, 1968. xii + 204 pp., illus. \$11.50.

Although it has photosensory capacities in some lower animals, an embryological derivation primarily from the central nervous system, and endocrine characteristics among adults of many higher vertebrate animals, the pineal has received scant attention from specialists in sensory physiology, vertebrate neurology, or endocrinology. A wealth of diverse discoveries during the past 15 years reveals the pineal organ, or epiphysis cerebri, to be worthy of attention as probably functionally significant within these three realms. The present review by Wurtman, Axelrod, and Kelly "attempts to summarize the present state of knowledge on pineal organs, and to suggest areas where further investigation might be profitable." Each of the authors has contributed notably to the investigation of the pineal, and in the present volume they organize their own related discoveries into a compact survey. The authors state in their preface, "Although most of the chapters are the creation of a single author, each of us has reviewed the work as a whole and accepts responsibility for its contents." Nevertheless, the contents and presentations of the chapters are

strongly influenced by the interests and opinions of the individual authors.

A brief review of pineal anatomy and evolution with major attention to results from descriptive electron microscopy forms the first chapter. Terse-ness and specialized descriptions may pose difficulties here for the less well prepared reader. Eleven full-page electron micrographs in this chapter are all of excellent quality and manifest significance.

Pineal biochemistry, pharmacology, and photic relations, which constitute the area in which the greatest advances and some unresolved disagreements have occurred in recent work, are the subjects of the next three chapters. The accent is on the pineal's content of 5-hydroxytryptamine, melatonin, norendrenaline, and related amines. Although some errors (as in table 2, p. 57) of citation, statement, or implication can be found, the overall result remains a stimulating and logically developed account.

Pineal physiology and the human pineal and its diseases are the subjects of the last two chapters. These are the briefest and weakest ones, and ones on whose subjects important findings have been more fragmentary and have been made at a slower rate. These final chapters also epitomize the relatively scant attention paid by the authors to articles published in languages other than English. Extensive work by several European schools deserves better coverage.

As a summary of present knowledge of pineal organs this book is far from complete or definitive. It is, however, in many respects more detailed and more likely to be conducive to further research than other books on the subject. For these reasons its utility should become evident, and it should acquire a grateful readership.

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## Life in the Cold and Wet

**The Biology of Marine Mammals.** HARALD T. ANDERSEN, Ed. Academic Press, New York, 1969. xiv + 514 pp., illus. \$21.50.

The sea is a hostile environment for warm-blooded, air-breathing mammals. The chilling power of cold water is readily appreciated by anyone who has

fallen into winter seas, and air breathing is a decided inconvenience to a predator seeking its prey in a three-dimensional world of water. A biologist who had studied only terrestrial species might conclude mammals could not live in the sea, but there they are in both diversity and number. And it is inevitable that they should receive attention both from scientists and from publishers.

Porpoises and whales in particular have a popularity which spans a period from early mythology through Moby Dick to modern television. This has resulted in a copious fringe literature which entertains the public and annoys scientists. We must frequently admit to disappointed questioners that we really don't know if porpoises can play chess. This separation of fact from hypothesis, both reasonable and wild, will continue to be a problem for the general reader. It is even a problem in the serious scientific literature.

*The Biology of Marine Mammals* edited by Harald Andersen has the strengths and weaknesses of a volume with many contributors. The chapters are as illuminating as the individuals writing them. Several of the chapters show little change from previous treatment of their subjects by the same authors. This is probably inevitable, but one should realize that perhaps only half the material in this book is original. In spite of this it is a pleasure to read again such repeats as Irving on temperature regulation.

Porpoises are very different from man. Only by extended observation and experiment can one perhaps begin to think like one. A chapter on the general aspects of communication (Evans and Bastian) shows the fruitful results of such extended looking at pinnipeds and cetaceans.

Hertel attempts a treatment of swimming based on modern tow-tank hydrodynamics. From the usual grist of models and Reynolds numbers, he "shows" that a porpoise shape has a lower drag than that of a tuna fish. In the real world the tuna apparently doesn't know this and swims twice as fast as the supposedly better-designed porpoise. The extrapolation from a towing tank to a live swimming animal in nature is a great one, and Hertel's treatment, although learned, does not illuminate the subject significantly. Final answers may come only from instrumented animals.

The rarity of solid data on marine