Book Reviews

Marmosets and Tamarins

The Biology and Conservation of the Callitrichidae. Papers from a symposium, Front Royal, Va., Aug. 1975. DEVRA G. KLEIMAN, Ed. Smithsonian Institution Press, Washington, D.C., 1977. vi, 354 pp., illus. Cloth, $15; paper, $8.95. Symposia of the National Zoological Park.

Marmosets and tamarins have been widely used for over a decade in medical research on virology, oncology, toxicology, and periodontal disease, yet their behavior and reproduction are still poorly known. This is surprising, especially in view of their chorionic fusion and resulting twin chimerism, a distinctive feature for genetic and immunologic studies. The present volume, reflecting a recent surge of interest in these small Neotropical primates, goes a long way toward alleviating this deficiency. The book contains 30 papers presented at a conference representing both the "users" and the "conservers" of callitrichids, together with lively panel discussions held among the 60 participants. Topics include evolution, conservation, field surveys and ecological studies, laboratory studies of social behavior and reproduction, and the management of breeding colonies. Most of the papers are short, but in two of the three long ones G. Dawson and P. Neyman present the first published results from field studies of more than a year's duration on any callitrichid. In many respects the Callitrichidae, as J. Eisenberg suggests, represent an ecological parallel to the Paleotropical squirrels and, because of their small size, rapid movement, and forested habitat, have long been thought to be too difficult to study in the wild. But even the smallest monkey, the pygmy marmoset, was the object of a successful five-month field study by M. Ramirez, reported here for the first time in English.

There is a considerable quantity of new data in this book: habitat preferences of different species; relationship of territorial behavior to degree of proximity of unrelated conspecifics; presence of postpartum estrus; limited maternal care of newborn; role of juveniles in parental care; and tendency of animals to carry members of their own sex. Particularly noteworthy is the finding, by both Dawson and Neyman, that the long-cherished model of nuclear extended-family social structure in callitrichids, based on excellent and replicated laboratory studies, does not hold in the wild, at least not for the two forms studied. Neyman finds fluctuations in group size among cotton-top tamarins in Colombia and suggests that the pair-bond may not be permanent. Dawson, presenting part of his Ph.D. thesis on the closely related Panamanian Geoffroy's tamarin, notes groups consisting of a breeding pair, their dependent offspring, and transient nonbreeding subordinate animals of both sexes. To describe this situation he suggests a new category of social organization: the "age-related dual dominance social system." Dawson's radiotagging studies demonstrate that individual juveniles move into both adjacent and distant groups with a minimum of interference by alpha animals. The degree to which this behavior is found among other species of tamarins and marmosets needs to be determined.

On the subject of reproduction H. Rothe describes in detail behavior accompanying parturition in *Callithrix jacchus*, reporting the first such study on a callitrichid. Papers by J. P. Hearn and by S. H. and J. K. Hampton report the first studies on basic reproductive cycles of callitrichids. With the use of immunoassay of blood steroids and leucocytic alkaline phosphatase activity, estrous cycles of 14 to 16 days have been established for *Saguinus oedipus*, *S. fuscicollis*, and *C. jacchus*. These studies help provide a basis for timed breeding studies since there is no menstrual cycle, no behavioral or morphological index of estrus, or any cyclic vaginal cytology in the Callitrichidae.

Although only a few species of marmosets and tamarins are heavily used in biomedical research, some are unique research models, as in the case of *S. mystax* for human hepatitis A virus. The need for callitrichids in research is real. The threat of extinction of several species is no less real. With the disruption and deforestation of habitats throughout South and Central America, it is essential, as is urged in the joint resolution by participants of the conference, to develop successful breeding programs, either in captivity or in seminatural environments, so that the needs of research can be fulfilled without making excessive demands on wild populations.

In summary, this book is a set of papers of high quality dealing primarily with the reproductive and behavioral biology of one of the less well-known families of primates. Despite the delay between presentation and publication of the papers, much of the information is still very new, and the book will remain a major source of data and theoretical perspective for many years to come.

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Bryozoology

Biology of Bryozoans. ROBERT M. WOOLLACOTT and RUSSEL L. ZIMMER, Eds. Academic Press, New York, 1977. xviii, 566 pp., illus. $35.

During the first half of this century, the bryozoologists of the world could have assembled in a telephone booth. Concomitant with the formation of the International Bryozoology Association in 1968, a critical mass of investigators was achieved and has produced what the editors of this volume call a renaissance of interest and a wealth of research activity. The purpose of the book is to provide a "current review and synthesis" of active areas of research and to expound "aspects of bryozoan biology which should be brought to the attention of a broad audience but have not received sufficient emphasis by bryozoologists." The editors and authors have accomplished this purpose in an outstanding fashion and have produced a very significant work. All the authors provide comprehensive reviews and most have been able to provide new insights.

Two focal points appear from the topics reviewed: evolution and basic biology. Though these are not mutually exclusive, for convenience of discussion I have regrouped the papers according to them. The themes and implications of the evolutionary papers are as follows.

The details of an event so basic as fertilization are unknown for most Bryozoa. Å. Franzén describes the macro-