

There are several advancing research areas that are represented in this volume. First, there are careful descriptions of when and where mammals deposit scent in nature and a fascinating attempt to correlate habitat type, phylogeny, and ecological niche with at least some aspects of the olfactory signal in a closely related group, the nocturnal prosimians (Schilling). Second, there have been some advances in understanding the chemistry of biologically important odors (Booth, Gorman) and in determining the discriminatory abilities of individuals for species-specific odors (Schilling, Gorman). But certain interesting and important advances in mammalian olfaction are barely represented, for example concerning the involvement of the vomeronasal organ in reproduction. Also, there is no summary of the available information on the chemistry of mammalian glandular secretions (the presumed "signals"), although there is a review of scent glands. Thus, although this volume contains some new and interesting research findings and several solid reviews of problems in olfaction, it does lack discussion of some major research areas.

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Seabirds

Behavior of Marine Animals. Current Perspectives in Research. Vol. 4, Marine Birds. JOANNA BURGER, BORI L. OLLA, and HOWARD E. WINN, Eds. Plenum, New York, 1980. xx, 516 pp., illus. \$45.

Marine birds, though taxonomically diverse, have a lot in common. Of greatest importance is the fact that they have to breed on land and forage at sea. Natural selection may yet produce an ovoviviparous murrelet, outdoing those real species in which the chicks go to sea when two days old, but for now such a murrelet must remain in the company of Hardy's swift (D. Lack, *Bird Notes* 30, 258 [1963]) and seabirds must nest, often colonially, on islands or coastal sites protected from terrestrial predators. There, they are accessible for the kind of studies of reproductive behavior that dominate the present book.

There has been a tardy realization that oceanic birds are an integral element in marine ecosystems, and this is reflected at the start by the stimulating though brief review by Richard Brown of seabirds as marine animals (in which, inci-

dentally, figs. 1A and 1B have been interchanged). Further insight is provided by Bernice Wenzel, who reviews evidence indicating that albatrosses and petrels, constituting the most oceanic group of birds, really do use olfaction extensively in finding food.

Almost the whole of the rest of the book, however, relates to seabirds on their breeding grounds. The scope is further restricted by the strong emphasis on the gulls and their allies and on the temperate zone and by the lack of representation of the "British school," whose long-term population studies have made seabirds better known demographically than, perhaps, any other group of organisms apart from humans.

Many recent workers have focused on seabird reproductive behavior from the point of view of evolutionary ecology rather than ethology. Although there is surprisingly little discussion here of the adaptive value of coloniality, there is an extended treatment of reproductive synchrony by Michael Gochfeld, which left me wondering whether Fraser Darling's hypothesis on the role of social stimulation within colonies still merits so much attention. There are timely and competent reviews of breeding habitat selection (Francine and Paul Buckley), adaptive functions of development (Roger Evans), and mate selection and mating systems (George Hunt), although in the last paper the author perhaps tries rather too hard to find field data conforming to contemporary evolutionary theory.

The outstanding contribution, in my view, is Joanna Burger's long, hard look at the data and ideas relating to the transition to independence and post-fledging parental care. Becoming independent is clearly a hazardous step for young seabirds competing with adults in unproductive environments; this paper, together with John Ryder's on the effects of age on breeding, leaves one in little doubt that the failure of many seabirds to breed until they are several years old, which has long intrigued ecologists, reflects the difficulty encountered by a relatively unskilled and inexperienced bird in reaching prime condition, and acquiring a mate and nest site, early enough in the season to have a reasonable chance of successful breeding.

A reflective essay by C. G. Beer on communication in gulls is of particular value as a reminder that the conclusions of rigorous ethological analysis can be conveyed in clear and elegant language; some other contributions, such as Montevicchi and Porter's study of parental investment in gannets, suffer by comparison. The final paper, William South-

ern's analysis of distribution and orientation of North American gulls, is flawed by presentation of banding recovery data mainly in the form of indigestible computer maps and by omission of the potentially interesting analysis of movements by age-class.

The editors of the volume have adopted a low profile, not attempting to achieve the kind of uniformity of presentation that one takes for granted in a journal, for instance in treatment of scientific names. Furthermore, they have apparently not read the proofs, with the result that the incidence of typographical errors varies wildly among the papers, reaching a peak on p. 325, where four out of eight scientific names are misspelled; my review copy is rapidly taking on the appearance of a corrected galley proof.

The reader finishes the book knowledgeable about North American seabird work and related studies elsewhere. One is left with the curious impression, however, that for most of the contributors the sea and its characteristics are almost irrelevant. It is especially striking, at a time when the economics of foraging forms a major strand in the literature of animal behavior, to find so little in this book on feeding behavior. Ways must be found to focus more precisely on the interactions of the birds with their marine resources if seabird biology is not to languish in the doldrums.

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Books Received

Acoustical Factors Affecting Hearing and Performance. Gerald A. Studebaker and Irving Hochberg, Eds. University Park Press, Baltimore, 1980. xiv, 450 pp., illus. \$34.50.

Adaptation and Intelligence. Organic Selection and Phenocopy. Jean Piaget. Translated from the French edition (Paris, 1974) by Stewart Eames. Hermann, Paris, and University of Chicago Press, Chicago, 1980. vi, 124 pp., illus. \$11.

Advanced Calculus and Its Applications to the Engineering and Physical Sciences. John C. Amazigo and Lester A. Rubinfeld. Wiley, New York, 1980. viii, 408 pp., illus. \$20.95.

Advances in Applied Mechanics. Vol. 20. Chia-Shun Yih, Ed. Academic Press, New York, 1980. xii, 236 pp., illus. \$31.50.

Advances in Applied Social Psychology. Vol. 1. Robert F. Kidd and Michael J. Saks, Eds. Erlbaum, Hillsdale, N.J., 1980. xvi, 222 pp. \$19.95.

Advances in Archaeological Method and Theory. Vol. 3. Michael B. Schiffer, Ed. Academic Press, New York, 1980. xiv, 448 pp., illus. \$39.50.

Advances in Cyclic Nucleotide Research. Vol. 13. Paul Greengard and G. Alan Robison, Eds. Raven, New York, 1980. x, 342 pp. \$35.

Advances in Drying. Vol. 1. Arun S. Mujumdar, Ed. Hemisphere, Washington, D.C., 1980. xiv, 302 pp., illus. \$55.

Advances in Electronics and Electron Physics. Vol. 53. L. Marton and C. Marton, Eds. Academic Press, New York, 1980. xii, 322 pp., illus. \$39.50.

Aging and the Perception of Speech. Moe Bergman. University Park Press, Baltimore, 1980. xvi, 174 pp., illus. \$17.95.