

REVIEWS

Bower-birds: Their Displays and Breeding Cycles.—A. J. Marshall. (Oxford, The Clarendon Press). 208 pp., 26 plates with 64 illus., 2 general maps, 6 distributional maps. 1954. Price, \$4.80.—This work is primarily concerned with highly perplexing questions pertaining to the nature and function of bower-bird behavior—subjects which have long been confused by a preponderance of anthropomorphic fiction. The author's excellent studies of display, sexual cycles, and the evolution of bower making bring clarity to one of the strangest phenomena in nature. His report culminates some 20 years of work in field and laboratory (included is a bibliography of 290 titles). In the end, he comes to attach primary importance to the durability of behavior patterns and uses them as a key to ancient relationships. He demonstrates with clarity that all of the reasonably well-known genera of bower-birds have behavioral patterns which fall easily into three groups: 1) "stage-makers," 2) "avenue-builders," and 3) "maypole-builders." Types two and three he considers true bower-birds, but type one he suspects has arisen independently and is a result of convergent evolution. Therefore, he suggests the erection of a separate family, the *Ailuroedidae*, for *Scenopoeetes* and its non-stage-making relatives, the cat-birds.

The "recreational" theory of bower function and various suggestions that bower-birds are more "intelligent" than other birds are tested and refuted. Display and bower building are postulated to be primarily associated with reproduction. The bower, the focal point of unusually developed courtship behavior, is considered a manifestation of "displacement activity." Its purpose, the author believes, is to attract and hold the attention of the female and to assist in the synchronization of reproductive processes. No concrete evidence of polygamy in any of the species is reported, and the pair bond is found to be elaborate and enduring.

The most studied species is the Satin Bower-bird, which the author describes as building a bower which is ". . . a brilliant dash of colour on the otherwise sombre forest floor." Given are the scientific details of the ornamentation of this bower, which consists of bright parrot feathers, fresh flowers, fragments of colored glass and crockery. Nothing is overlooked, from vocal mimicry to sexual periodicity, pairing, bower orientation, use of tools in bower painting, nesting, and nomadic wanderings. The vast amount of field work forming the basis of this report is perhaps best reflected in the account of the marking of glass fragments with a diamond pencil, the distributing of them over an area of about 50 square miles, and the checking of the movements of the glass from bower to bower each week over a period of two years in order to discover how males pirated each other. Reported also are color preference tests given wild birds, and one extremely enlightening test given a bird raised in captivity which had never seen a decorated bower. These studies are deeply gauged: display, bower construction, "painting," color selection, and vocal mimicry all emerge as manifestations of innate behavior activated by the periodic influence of sex hormones.

An important portion of the book is devoted to internal rhythms and to a study of the basic events and stimuli which in ways still incompletely understood activate chains of reactions and patterns of remarkable complicity. The factors that play a part in regulating breeding seasons are discussed. Recapitulated are the epochal findings of Rowan and other methods by which birds are thought to keep in touch with seasonal changes to ensure optimum breeding conditions. Light per se is shown not to be the all-controlling factor, certainly not in equatorial latitudes and probably not elsewhere. A provocative suggestion is offered that perhaps, in company with the classical Sooty Tern, many equatorial birds will ultimately be found to have

breeding cycles which are not geared to the calendar. Rainfall is suggested as a most likely regulator because of its bearing on the abundance of food on which the young can best be raised.

This reader must confess to disappointment at the meagerness of data concerning molt and the tendency to oversimplification of molting seasons in species which dwell close to the equator. A minor defect is the map of New Guinea, which is not of recent vintage and was not prepared with the high degree of care lavished on the rest of the book. Misspellings of two prominent terrain features are unfortunate. A slip in the description of the *Cnemophilus*, described on page 144, should be noted. This very distinct race has the head golden yellow tinted with red on the forehead, not ". . . a clear red head." It is pertinent to mention also that, since Marshall's book went to press, the genus *Cnemophilus* has been removed from the bower-birds and put with the birds of paradise by Dr. Ernst Mayr (1954, Mayr and Gilliard, Birds of Central New Guinea, Bull. Amer. Mus. Nat. Hist., vol. 103, p. 362) on the basis of anatomical studies of birds collected in 1952.

The dearth of information pertaining to New Guinea bower-birds is emphasized and, it is hoped, will inspire local residents to take a hand in solving the many important riddles which so far have resisted detection and analysis. It is little short of fantastic that the bower of New Guinea's Regent Bower-bird (*Sericulus bakeri*), a species occurring in the neighborhood of populous Madang, should remain undiscovered. The bower of one of the two species comprising the genus *Archboldia* is completely unknown, as is that of the spectacular Golden Bird (*S. aureus*). Besides this, the mystery of the place of origin of *Amblyornis flavifrons* remains unsolved. The species is still known only from trade skins acquired during the era of plume collecting. These facts well illustrate that New Guinea, the home of most of the bower-birds (12 of the 18 species comprising the family occur in New Guinea, with only two of the New Guinea species occurring also in Australia) is still being surveyed for unknown species. Behavioral studies will follow later, perhaps much later in the case of species dwelling in inhospitable environs; that is, if the Australian Regent is a criterion. Indeed, it was something of a shock to learn how little is known of the display of this bird which lives in mountain forests within 60 miles of a city of one and a half million people. Vernacular names are always a source of difficulty. For example, recent evidence confirms Stresemann's decision to call *Archboldia sanfordi* a species (1954, Journ. für Ornith. 95, no. 3-4, p. 291) and not a race. Therefore, the "Golden-crested Black Bower-bird" so named by Marshall might best be renamed as follows: Sanford's Golden-crested Bower-bird for *Archboldia sanfordi* and Archbold's Bower-bird for *Archboldia papuensis*. The selection of the name "Gold-maned Gardener" for *Amblyornis flavifrons* seems inappropriate. Should not more be made of the fact that this golden-fronted species is the only crested gardener in which the forehead is *not* brown?

Marshall's suggestion that the stage-maker *Scenopoeetes* and the cat-birds be excluded from the *Ptilonorhynchidae* will probably not win acceptance. Indeed, after this book went to press Mayr (op. cit.) reported that his dissections showed *Ailuroedus* to be a typical bower-bird. Nevertheless, it is valuable to have these observations which use sexual display as the primary measuring stick.

Corroborative evidence in favor of part of the natural grouping advocated by Marshall is that provided by a study of their eggs. He points out that, although maypole-builders and avenue-builders do not exhibit plumage characters which render them readily divisible, their eggs (so far as known) are strikingly different. The eggs of the maypole group are plain and whitish, while those of the avenue-

builders are heavily marked. It is interesting to note that the eggs of the cat-birds (as well as *Scenopoeetes*) are unmarked.

This is a highly interesting, meritorious book.—E. THOMAS GILLIARD.

A Guide to Bird Finding West of the Mississippi.—Olin Sewall Pettingill, Jr. New York. Oxford University Press. 709 pp. 1953. \$6.00.—With the possible exception of Victor E. Shelford's *Naturalist's Guide to the Americas* this book and its companion volume on the eastern states are the only works of their kind. The scope of Pettingill's books is less comprehensive than Shelford's, but their treatment in more detailed.

The organization and style of this Guide are the same as those in its eastern counterpart. The introductory section of each chapter discusses the ornithology of the state as a whole, relating the distribution and migration of birds to physiographic regions, biological communities, and winter climate. These discussions are well written and can be of interest not only to those who are visiting a state for the first time, but also to those who are familiar with its opportunities for birding. For the traveler who must follow a route which does not include any of the places cited in the balance of each chapter, these introductions supply information on the types of habitats which are most profitably investigated and on the species of birds most likely to be found.

Thanks to the cooperation of the many people who provided Dr. Pettingill with information, the descriptions of specific places for finding birds are remarkably detailed. A lack of field work is indicated in those instances where details are sparse or misleading. Doubtless many of those who use this book will do so only in hopes of finding new birds to add to their life lists. But for more inquisitive and adventurous naturalists the book can also serve as a guide to little-known, though promising areas of biological interest.

Pen-and-ink drawings by George M. Sutton add greatly to the attractiveness of the book. His designs and clear handling of his medium enable him to convey impressions of light and depth with an economy of lines. The book closes with a useful list of suggested reference materials and an index.—PETER STETTENHEIM.

The Yellow Wagtail.—Stuart Smith. London. Collins. xiv + 178 pp., 8 figs., 8 plates. 1950. \$2.50.—This is the earliest of several New Naturalist Monographs that deal with birds. It concerns the Yellow Wagtail (*Motacilla flava*), its life-history and distribution. Knowledge of the European and particularly the British populations is stressed. Considerable detail on the distribution of these populations is given in an appendix. Another appendix deals with parasites. There is also, in the final chapters of the main text, a non-technical review of the nomenclatural history and geographic variation of this species.

This book is the product of a "continual hobby and sparetime preoccupation" by a "scientist whose normal work lies in a sphere far removed from ornithology." The text gives us many interesting and worthwhile facts concerning wagtails. Its main strength appears to lie in the descriptions of behavior and of the nesting cycle. The illustrations, in particular the paintings of Edward Bradbury, are excellent.—FRANK A. PITELKA.