

ORNITHOLOGICAL LITERATURE

THE HONEY-GUIDES. By Herbert Friedmann. Bulletin 208 of the United States National Museum, Smithsonian Institution, Washington, D.C., 1955: 6×9 in., vii+292 pp., 6 text figures, 20 photographs, 5 color plates by Walter A. Weber.

Along with "The Cowbirds," this book is bound to become an ornithological classic, not only for the unusual interest attached to the subject matter, but for the excellence of the scholarship and detective work it displays. A first opinion might consider that 300 pages is a lot to devote to a preliminary report on an obscure family of birds containing only 11 species, some of them known from only a few specimens and a few casual field observations. A few minutes of perusal will dispel any such delusion, and a thorough study will convince the reader that in this volume Dr. Friedmann has made a highly significant contribution not only to ornithology, but to several facets of animal behavior and even to digestive physiology. In compiling this work Dr. Friedmann consulted or corresponded extensively with most of the active field ornithologists of Africa and Southern Asia. Cooperators and consultants on various aspects of the work included a large number of biologists, bacteriologists, chemists and anatomists. The list of references cited contains 285 titles.

In the first part of the book (83 pages) Dr. Friedmann discusses the basic biological problems raised by the peculiar behavioral characteristics of the honey-guides, particularly their interesting development of brood parasitism, the remarkable "guiding" habit, and wax eating or cerophagy. The second part (181 pages) contains descriptive materials and observations on each of the 11 species known to science. Twenty well-selected and instructive photographs and five beautiful color plates show the characteristics of each of the species and depict various significant aspects of their structure and behavior.

The honey-guides, a small and relatively obscure family of arboreal birds of tropical Africa and southern Asia, belong to the order Piciformes and show their closest affinities with the barbets. The eleven species, largely dull gray in coloration, range in size from two warbler- or tit-sized foliage gleaners (*Prodotiscus*) to the tanager- or waxwing-sized Greater Honey-guide (*Indicator indicator*) of open woodlands and "brushveldt."

Although information is still incomplete on several species, the honey guides are apparently all parasitic in their nesting. In this respect they go farther than any of the other bird families which display this behavioral trait. Friedmann believes the habit probably antedates the evolution of the group into its present generic sections and is older and more advanced than in any other family of birds. A large variety of hosts or victims is selected, most of them, at least for the members of the genus *Indicator*, being hole-nesting species. This specialization on cavity nesters would seem largely to eliminate any elements of competition for hosts with the parasitic cuckoos and ploceids.

Associated with brood parasitism is a reduction in specialized territorial and courtship displays, although several species, notably the remarkable and little known Lyre-tailed Honey-guide (*Melichneutes robustus*), of the tropical forests have interesting flight displays in which rustling noises are produced by the tail feathers. Mating in the Greater and Lesser Honey-guides takes place at call sites or "stud posts" which are occupied by a single male and visited by a series of females apparently for mating purposes only. Several males may use a "stud post" successively or concurrently, singing their simple two-syllabled song, and waiting without evidence of competition. Stud posts are used continuously by singing males year after year, in one case for 20 years.

Unlike the parasitic cuckoos and cowbirds, the honey-guides, typical of their picarian relationships, have long fledging periods; competition with their nestling associates depends on direct action rather than speed of maturation. In two species, at least, nestling aggressiveness is aided by the possession of a pair of sharp-pointed mandibular hooks which may be used with great effectiveness in biting the delicate skins of nest-mates. Nestlings of the Greater Honey-guide have also been observed to evict their nest-mates directly. More than one honey-guide egg in a parasitized nest is rare, and only one fledgling is produced per nest.

The mandibular hooks, like the familiar egg tooth of other birds, are shed during the nestling stage. Special histological studies showed a basic similarity between "hook" and "tooth," and an examination of the bills of nestlings belonging to other picarian species reveals that this peculiar structure is not wholly without homologous counterparts in the barbets and woodpeckers.

Perhaps the main objective of the book, and its major contribution to science, is an examination and analysis of the guiding habit as observed in the Greater Honey-guide (*I. indicator*) and occasionally in the Scaly-throated Honey-guide (*I. variegatus*). After reviewing early accounts and interpretations of this remarkable behavior, Friedmann carefully describes all aspects of the performance based on his own experience (23 instances) and the observations of a large number of competent eye witnesses. Typical guiding behavior is summarized as follows: "When the bird is ready to begin guiding it either comes to a person and starts a repetitive series of churring notes, or it stays where it is and begins calling these notes and waits for the human to approach it more closely. These churring notes are very similar to the sound made by shaking a partly-full, small matchbox rapidly lengthwise. If the bird comes to the person to start leading him, it flies about within 15 to 50 feet from him, calling constantly, and fanning its tail, displaying the white outer rectrices. If it waits for the potential follower to approach it for the trip to begin, it usually perches on a fairly conspicuous branch, churring rapidly, fanning its tail, and slightly arching and ruffling its wings so that at times its yellow "shoulder" bands are visible. As the person comes to within 15 to 50 feet from it, the bird flies off with an initial conspicuous downward dip, with its lateral rectrices widely spread, and then goes off to another tree, not necessarily in sight of the follower, in fact more often out of sight than not. Then it waits there, churring loudly until the follower again nears it, when the action is repeated. This goes on until the vicinity of a bee's nest is reached. Here the bird often (usually in my experience) suddenly ceases calling and perches quietly in a tree nearby. Some observers record no such cessation of the churring notes when near the bee's nest, but all agree that the bird perches unobtrusively in a nearby tree or shrub and there waits for the follower to open the hive, and it usually remains there until the person has departed with his loot of honeycomb, when it comes down to the plundered bee's nest and begins to feed on the bits of comb left strewn about. The time during which the bird may wait quietly may vary from a few minutes to well over an hour and a half."

Man is not the only symbiont in these cooperative guiding performances. The Honey Badger or Ratel (*Mellivora capensis*) is known to play the role of follower and hive opener at times, and baboons may occasionally participate. Ratels apparently grunt noisily when following a Honey Guide, and natives often make a practice of grunting in a similar manner and beating trees with sticks, believing that in so doing they get better cooperation from the bird.

Of particular interest is the fact that the guiding habit is apparently unknown in certain sections of Africa and has been disappearing in others, particularly near cities where natives can buy their sweets in shops and no longer make a regular practice of following the birds. There is a danger, in fact, that this interesting behavior may disappear except in the remote hinterland where natives continue to contribute their part in the symbiotic relationship.

The peculiar habit of cerophagy or wax-eating is apparently important as a basic element in the evolution of guiding behavior. Formerly thought to be primarily insectivorous birds with special predilections for bees and bee larvae, honey-guides have now been shown to feed extensively and preferentially on beeswax and even to thrive for a month on an exclusive diet of wax. Because of the special problems involved in assimilating and utilizing wax as food, laboratory studies were initiated to determine the chemical changes induced in the digestive tracts of these birds. Preliminary results indicate that either the microflora of the alimentary canal or the endogenous avian enzymes are capable of splitting these waxes into fatty acids of considerably lower molecular weight, so that it becomes possible for the birds to extract nourishment from them.

An interesting discussion is devoted to the "behavioristic level" of the guiding habit and to its antiquity and evolution. "Guiding" is regarded as a dangerous term if it implies purposive or adaptive behavior at the individual level. Friedmann believes that guiding is basically instinctive and stereotyped, although the selection of the symbiont or "guiding kumpan" is probably the result of learning. A study of the routes followed by guiding birds suggests that in many cases, at least, the destination at the hive was not known to the bird at the start of the tour, but was discovered by random searching after the human participant had been enjoined. It is suggested that the sight of a human being or a honey badger may tend to excite a bird which has previously encountered one of these creatures at the site of a freshly opened bee nest. The excitement of the bird results in the approaching and calling behavior characteristic of the first stage of guiding. The human or badger symbiont responds to this calling, presumably through associative memory, and the guiding-following act ensues. The encountering of a swarm of buzzing bees is thought to suppress the bird's excitement and, in terminating the stimulus situation for the follower to lead to localized foraging near the site and the discovery of the hive.

Friedmann believes that the habit is quite old and probably antedates the advent of man. He suggests that the ancestral honey-guides may have been primarily followers rather than guides and have developed a simple functional relationship with other bee predators before any guiding behavior evolved.

In these days when scientific workers struggle and groan under an overwhelming avalanche of scientific publication, there will be some who decry the anecdotal presentation and frequent reiteration to be found in this work. One might wish to see some of the data tabulated and some of the sections summarized in precise phrases; but the subject in general does not lend itself to concise quantitative treatment. Here, in fact, is an admirable example of what the naturalist means when he tells his experimentalist colleagues that much in science can only be presented in narration and description. "The Honey-Guides" is an exhaustive compendium of information, objectively gathered, scientifically organized and ably presented as a record of several remarkable biological phenomena, and as a firm basis for launching further exploration and study.—JOHN T. EMLEN, JR.

A DISTRIBUTIONAL CHECK LIST OF THE BIRDS OF ILLINOIS. By Harry R. Smith and Paul W. Parmalee. Springfield; Illinois State Museum, Popular Science Series IV, and Illinois Audubon Society, 1955:4 $\frac{3}{8}$ × 7 $\frac{1}{2}$ in., 62 pp. \$.25.

The last previous list of the birds of Illinois was Gault's "Check List of the Birds of Illinois" published by the Illinois Audubon Society in 1922. It was published to "render assistance to observers and students of bird life everywhere in Illinois" and was printed in handy pocket form for the benefit of the field student. The present volume brings Gault's list up to date with the inclusion of all new records of the past 30 years, and retains the useful shape and size of the original. All species recorded are included in a single list, with a short résumé of their abundance in northern, central, and southern Illinois, and, in the case of rarer species, brief notes on recent observations. Common names are those of the forthcoming American Ornithologists' Union Check-List, and when these differ from those of the 1947 edition of Peterson's "A Field Guide to the Birds," the latter are added in small type. Scientific names are to the species level only, as is proper in a work of this type.

Many of the new species added to the list, and indeed several of the old ones that are retained, are based upon sight records only. The authors recognize that they may be open to criticism on this score, and they are careful to point out that "before a new state record should be accepted as scientific data, this record should be based on and verified by a collected specimen. . ." Further, they place an asterisk before the name of a species included solely on the basis of a sight record. Despite these precautions on the part of the authors, there is an unevenness in the value of these records that makes the reviewer wish that at least some of the species had been removed to a hypothetical list. Although the check-list was prepared primarily for the field student, the fact that it is the only recent list of Illinois birds will make it an important source for museum workers, and a more critical evaluation would have been desirable. At least a fuller account of the circumstances surrounding the previously unpublished sight records would have made it possible for the reader to make his own evaluation.

Although it is not possible or proper to review all the doubtful forms, there are a few species to which attention should be drawn. The Mexican Cormorant is considered as being based upon a collected specimen, but the source of this specimen was doubtful, and the species should be considered hypothetical rather than accidental. The Royal Tern and the Gull-billed Tern are both based on unsupported observations of Nelson of 80 years ago, and both forms should go on a hypothetical list. The Brown-headed Nuthatch is based solely upon recollections 40 years old at the time of recording. The same is true of Ridgway's "recollection of what he believes to have been" an Ivory-billed Woodpecker. Certainly some comment is due on the quoted sight records of the Passenger Pigeon reported in 1923, since the last authenticated specimen of that extinct form was collected in 1900. The few recent observations listed under the Snowy Owl are incomplete and give a misleading idea of the relative abundance of that form in years when there is a major flight. The only omission that is apparent is the Long-billed Dowitcher, *Limnodromus scolopaceus*; Pitelka, in his recent monograph (1950. *Univ. Calif. Publ. Zool.*, 50:1-108.) lists specimens of both the Long-billed and Short-billed Dowitchers from Illinois.

The above comments are not meant as a major criticism of a work which is admirably suited for the use for which it was intended. Rather it is to be hoped that the future revisions which the authors promise will contain enough additional information to broaden its usefulness to students outside the state.—MELVIN A. TRAYLOR.

MANUAL DE LAS AVES DE EL SALVADOR. By A. L. Rand and Melvin A. Traylor. San Salvador; Universidad de El Salvador, 1954:7 $\frac{7}{8}$ × 9 $\frac{5}{8}$ in., iv + 308 pp., 108 figs. in text. Paper bound; lithoprinted.

The only book on the birds of El Salvador prior to the appearance of this volume was Dickey and van Rossem's monumental "The Birds of El Salvador," published in 1938, a treatise of limited usefulness to Central American ornithologists since it is printed in English and includes no sections on field identification. The present volume, printed in Spanish and containing keys to species and detailed descriptions of each species, makes available a comprehensive volume which should be most useful to Central American ornithologists, whether amateur or professional.

Much of the material presented is taken from Dickey and van Rossem, supplemented by data from J. T. Marshall, Jr.'s paper (1943. *Condor*, 45:21-33) and by the observations and collections made by Rand, who spent six months in El Salvador. The introductory sections cover such topics as topography, climate, vegetation, composition of the avifauna, migration, and breeding. Much of this material has been condensed from Dickey and van Rossem.

Wetmore's classification of families is used. The classification of non-passerines follows Peters, and that of passerines, Hellmayr. Following each family is a brief characterization of the group. Then follows a key for the identification of those species which are found in El Salvador. Appearing under each species are sections on description of adults and young, diagnostic characters, range (both general and in El Salvador), biology (status, relative abundance, habitat, food habits, extreme dates for migrants, and nesting), and lastly a general section on behavior, voice, and related topics. Much of the material in the general sections has been taken from Dickey and van Rossem, and the source of such material is indicated throughout.

Both scientific and vernacular names are given for each species. Where the scientific name differs from that used by Dickey and van Rossem, the latter is given in a footnote, so that the two sets of names can be equated. In a few cases citations are given pertinent to the name changes, but most are unexplained. Many of the vernacular names are awkward translations of the English. How many ornithologists will commit to memory such names as "Colymbo sureño de pico moteado" (Southern Pied-billed Grebe) or "Ave tropical del norte de pico rojo" (Northern Red-billed Tropic-bird)? Such cumbersome vernaculars will undoubtedly force serious students to memorize the scientific names, which is all to the good. The authors should not be criticized adversely for these vernaculars, since translation into Spanish of an already confused set of English names poses almost insuperable problems.

The book contains many of the illustrations by Douglas E. Tibbitts which first appeared in E. R. Blake's "Birds of Mexico." These are fairly well reproduced, although most have been considerably darkened with consequent loss of fine detail.

The chief defect that appears is the treatment of each subspecies, where two or more races of a given species occur in El Salvador, as a separate entity, with its own account. Since most of the races concerned are indistinguishable in the field, it would have been less confusing to have had an over-all account for each species, with a listing of the various races and their distributions in the section on range. The treatment of races as separate entities does not seem compatible with the statement in the introduction that this volume is designed for the non-specialized reader.

It seems obvious that if interest in natural history is to be awakened in Central

America, competently written books, printed in Spanish, must be made available to students there. The Instituto Tropical de Investigaciones Científicas de la Universidad de El Salvador is to be congratulated for its projected series of scientific works in Spanish, of which this is the first, and the authors are to be commended for a job well done.—JOHN DAVIS.

AVES, ZOOLOGICAL RECORD, 91 (for 1954), Sect. 17. By W. P. C. Tenson. Zoological Society of London. 101 pp. Paper. 7s 6d.

Lt. Col. W. P. C. Tenson has again performed an important service to ornithology by preparing the *Aves* section for the *Zoological Record*. The 1954 tabulation, received in the Wilson Ornithological Library in November, 1955, lists 1,972 titles of bird papers from all parts of the world. The usual cross-index provides an extensive key to the subject matter by "Subject" (67 headings), "Distribution—Geographical and Geological" (58 headings), and "Systematic" (110 family headings). Although by no means a complete tabulation of the ornithological output of 1954, this summary is easily our best single bibliographic source. Whether or not one has need to look up any reference whatever, a mere glancing through the *Aves* volume will give the reader such a cross-section of modern ornithology as can be secured in no other way.

Bird students may purchase copies of this valuable 101-page booklet from the Zoological Society of London, Regent's Park, London, N.W.1, England, for a dollar and ten cents, postpaid (7 shillings 6 pence, which may be conveniently paid by foreign money-order obtainable at U.S. Post Offices).—JOSSELYN VAN TYNE.



NEW LIFE MEMBER

Lukas Hoffmann, a native of Switzerland, earned his doctorate at the University of Basle, Switzerland. He now lives in the Camargue in southern France and spends much of his time in studies of migration and ecology of birds. Dr. Hoffmann bands about 5,000 birds each year. This picture shows him on his way to band Flamingoes. He has banded about 2,000 downy young of that species and has received some 60 returns from southern Europe and Africa.