

ORNITHOLOGICAL LITERATURE

THE WILD TURKEY, ITS HISTORY AND DOMESTICATION. By A. W. Schorger. University of Oklahoma Press, Norman, 1966: 6¼ × 9½ in., xiv + 625 pp., 1 col. pl., 48 bl. and wh. pls., 20 figs., 34 tables. \$10.00.

The great American bird known as Turkey has had a tremendous influence on the culture and economy of both primitive and civilized man. Native to the temperate regions of North America, the Turkey was domesticated by the relatively highly civilized Indians of Mexico and subsequently has spread all over the world in numerous domestic varieties.

A. W. Schorger, by his characteristically patient and exhaustive search of the literature, has brought to light an enormous amount of information on the history and biology of this extraordinary bird. The rapid-fire citation of references, although related to each other under general headings, is not conducive to a smooth flow of ideas. However, the author has handled this type of presentation skillfully.

The format of the book is attractive and it is adequately although not liberally illustrated by appropriate photographs and line drawings. One plate in color by Owen J. Gromme depicts three gobblers in a woodland setting.

In Europe, before the discovery of America, any large bird which spread its tail, including the Capercaillie, came to be known as "turkey." Most of these were probably peafowl which may have received that name because it was known to have reached Europe via the trade routes from the Orient through the general region then known as "Turkey." Later when the American bird, which we now know by that name, was taken to Europe by the Spanish explorers and later reached England, it likewise appears to have been confused with the peacock and acquired from it the name turkey.

During his march to Mexico City, Cortez found domestic Turkeys in practically every town, and early explorers found them confined extensively in pueblos of the Indians in what is now the southwestern United States.

On a map of original ranges of Turkey subspecies in the United States and Canada, the extension of the Rio Grande Turkey up the Pecos River to meet the Merriam's Turkey in southeastern New Mexico is questionable as is also the extension of the range of Merriam's Turkey down the Canadian River in eastern New Mexico to meet the Rio Grande Turkey in the short grass plains of the Texas Panhandle. There would seem to be no reason for assuming that Merriam's Turkey was formerly any less confined to mountain habitats than at present.

The map of original distribution of wild Turkeys in Mexico, based on extensive and difficult literature search, is a valuable contribution to our knowledge. It eliminates the disturbing gap in the range of the southern race (*gallopavo*) shown on maps in other recent publications.

Attempts to estimate pre-Columbian Turkey populations by state are an interesting exercise but seem rather futile in view of the difficulty experienced by modern game managers in the same states with the much more reliable information available today.

In the field of classification, the fossil record of extant and extinct species of turkey is described. Taxonomic affinities of modern turkeys based on morphological characters, hybridization tendencies, and protein relationships are discussed. Generic distinctness of *Meleagris* from *Agriocharis* is considered justified but no opinion is offered as to the distinctness of the family Meleagrididae from Phasianidae.

In discussing the much debated application of Gould's *mexicana*, despite a question over the type locality, Schorger came to the logical conclusion that, based on measure-

ments of the type specimen, *mexicana* is referable to the large Turkeys of the Sierra Madre Occidental of Northwestern Mexico, not the small bird of the mountains in the latitude of Mexico City.

Schorger believes that there probably are few wild Turkeys in the United States today without some admixture of domestic blood because of the considerable amount of opportunity for interbreeding. This concept appears to overlook the principle of natural selection. Leopold (1944) produced evidence of genetic characteristics of "wildness" in wild Turkeys not found in domestic birds. These traits, presumably, are selected for survival by the wild Turkey's exacting environment. Birds with characteristics that might result from crossing with domestic stock would tend to be eliminated before reaching reproductive age. Evidence both for and against this thesis is given in the chapter on characteristics but no proof is shown that either domestic Turkeys or those of mixed blood have become established as wild birds in other than semi-domestic environments or notably predator-free areas such as the Hawaiian Islands.

Interesting evidence of inborn fear of predators among pure wild Turkeys was shown by an experiment in which a silhouette model having a short neck and long tail when moved in view of young Turkeys in a normal fashion simulating a hawk aroused the birds to fear; when pulled tail first, "simulating a goose," they showed no fear. There seemed to be general agreement in references cited that wild Turkeys could not be thoroughly domesticated in one generation. Successive generations in captivity produced tamer birds. Presumably, selection of more tractable individuals was involved.

The author points out the great variety of environments occupied by Turkeys in different parts of their range and different times of the year. He then proceeds to show that different races of Turkey seem to have quite limited tolerance for environmental conditions and that their ranges tend to fall rather neatly into regions having different amounts of precipitation.

One chapter is devoted to management and there is a wealth of citation of pertinent published information under such subjects as legal protection, winter feeding, food planting, controlled burning, water supply, rearing in captivity, standards for wild Turkeys, capture of wild birds for restocking, drifting following release, determination of sex and age, and population census. Causes of Turkey mortality such as predation, weather, accidents, diseases, and parasites are documented in detail and will serve as a valuable source of reference for wildlife managers. A conclusion was reached that successful management of Turkeys is tied to good wild stock and a range of adequate size and quality. Since wild Turkeys will not breed successfully in captivity, this means transplanting from wild stock to increase range. Although the author states in his preface that management is treated very lightly because it is aside from his main objective, much of significance in this field is included not only in this chapter but in those on other subjects particularly on restoration and introduction. In fact, the book is a well-balanced monograph on the wild Turkey from all aspects.—JOHN W. ALDRICH.

THE BIRD FAUNAS OF AFRICA AND ITS ISLANDS. By R. E. Moreau. Academic Press, New York, 1966: 6 × 10 in., viii + 424 pp., 65 figs. (photos and diagrams). \$18.00.

No more timely book on African ornithology has appeared in recent years than Mr. Moreau's "Bird Faunas of Africa." To those of us fortunate enough to have witnessed African birds and lived with them, the full breadth of this book should at once be apparent. It is more than just an account of the composition and origins of the bird

faunas of Africa; the subject matter covers nearly every aspect directly or indirectly affecting the bird life for the past 100 million years.

Early in the book a distinction is drawn between birds of evergreen forests and birds of other habitats; and also between lowland and montane species. Within each of these categories, there is a further subdivision into five groups: (1) water-bird families, (2) raptors and owls, (3) game and other ground birds, (4) other non-passerines, and (5) passerines. With these divisions in mind, the reader is better able to comprehend the zoogeographical effects of the different habitats on their respective faunas. Indeed, these divisions reflect the logical approach of the entire book.

It is possible to detect a history of rapid speciation among African birds. The history of the African continent too is shown to be one of rapid and considerable changes, even within the last ten or twenty thousand years. Only 12,000 years ago, for instance, the distribution of montane birds was apparently much more extensive than it is today. Changes are at present being effected by man who seems to be busy devastating the African continent at great cost to its wildlife. In the Foreword (which is, incidentally, the best and most competent review of the book!) Moreau draws our attention to this. "By the time the Africans are ready," he says, "to become amateurs of field biology most of them will have to scabble about in the ruins of their fauna and flora, as everyone else in a 'developed' country must do . . ." I think that the devastation of Africa is perhaps not yet widely acknowledged by the rest of the world. Today we can still study the "grand designs" of African biomes; we are privileged to have the scholarship of Moreau to produce for us this book at this time, for tomorrow may be too late.

The breeding seasons of African birds have long been studied by Moreau in East Africa, so that it is not surprising to find in Chapter 2 an account of African climates and vegetation types and an analysis of how these affect avian breeding seasons. The bird faunas of a selected number of African vegetation types are outlined in Chapter 15, for the most part very adequately, but it is a little disappointing that the section on the Kalahari neglects the excellent information provided by Smithers' "Check List of the Birds of the Bechuanaland Protectorate" (1964). Even if this part of Moreau's manuscript was already complete by 1964, it would have been as well to revise it. The South African bird faunas have been somewhat neglected; this may have been deliberate, since they are so well covered elsewhere in the literature. The emphasis placed on North and East Africa is understandable in view of Moreau's long personal experience in these regions.

The grand designs of the African biomes are frequently and enlighteningly compared with corresponding biomes in other parts of the world—such far-flung places as North and South America, the Palaearctic Region, Australia, and India on the broad scale, with narrower comparisons with Arizona, the Thames Valley, and Spain. The comparisons between the bird faunas of the Palaearctic and Ethiopian Regions are particularly relevant in terms of actual species composition in the area north of the Sahara, while a comparison of Somaliland with Arizona indicates the wealth of ground birds in Africa.

The biological poverty of West Africa, when compared with the rest of Africa south of the Sahara, is a fact that emerges repeatedly. Only South America, among the larger land masses, has an avifauna richer in species than has Africa south of the Sahara. The richness of these two continents reflects their large tropical areas which provide more ecological niches than do more temperate regions.

As with the African continent, so with the islands. The chapter on Madagascar is totally fascinating. How many ornithologists are aware of the existence of *Coua cursor*, a terrestrial cuculid of the subdesert regions of Madagascar, recalling the Roadrunner

(*Geococcyx californianus*) of America? Following the accounts of the island bird faunas is a chapter discussing them in some detail. It is interesting that the adaptive radiation within groups of African island birds is not as extensive morphologically as in the Galápagos and Hawaiian Islands.

What this excellent book has done (and it is, I believe, what it set out to do) is to summarize our present state of knowledge and to indicate very clearly where the more important gaps occur. The problems raised are challenging and often quite as intriguing as the facts presented. The few minor typographical errors (is it "Socotra" or "Sokotra" (pp. 302-303); and is it "Gillmore" or "Gillmor" (pp. 105-109)?) and the mistaken substitution of "miles" for "km." in Figure 23 do nothing to detract from the immense value of this book. The Bird Faunas of Africa and Its Islands is a work conceived and executed on a grand scale.—GORDON L. MACLEAN.

A FIELD GUIDE TO THE BIRDS OF NEW ZEALAND AND OUTLYING ISLANDS. By R. A. Falla, R. B. Sibson, and E. G. Turbott. Houghton Mifflin Company, Boston, 1967: 4½ × 7½ in., 254 pp., 18 pls. (6 col.) and 63 line drawings by Chloe Talbot-Kelly. \$6.95.

Nobody knows better than I the need of this Peterson-type field guide for New Zealand. On a recent sojourn for birds in that country I had to refer repeatedly to as many as four different publications in combination for nomenclature, description, vocalizations, distribution, habitat, and breeding habits. Now, belatedly, here is all information between two covers—and in generous amount.

In preparing this book, Messrs. Falla, Sibson, and Turbott have not been forced to skimp on facts and condense phrases to the intelligible minimum as have the authors of similar guides to continental birds. With only 200 or so species, including those on the outlying islands—from the Kermadecs in the north and Chatham on the west to Macquarie in the south—they have had enviable space in which to introduce each bird family and to give details about each species. This is not to say that they have resorted to discourses and essays. Their writing is tightly composed and their factual material judiciously selected.

Descriptions of all species are satisfactorily thorough, with appropriate emphasis on the more obvious features useful in identification. For the endemic species, the write-ups take up a page or more, giving fact-filled summations of range and status, habitat preferences, food and feeding habits, history since human settlement, and nesting data. Such highly unique New Zealand forms as kiwis, the Weka (a flightless rail), Wrybill (a plover), Kakapo (a nocturnal parrot), Kea (mountain parrot), wrens (acanthisittids), and wattle-birds (callaeids) get extensive treatment. Even so, the winter visitants and the many introduced and now well-established birds receive a large share of attention. All in all, the book proves to be much more of a reference work than one would expect of most field guides.

For all conservationists, a happy message keeps emerging from many accounts of endemic species. As summarized in the preface: "The decline in many native birds, so marked in the nineteenth century, seems to have been arrested. Most in fact are holding their own; some have turned the corner and are utilising new habitats, such as hydro-electric dams, reclaimed salt-marshes, man-made forests of exotic pines, swamp-lands now choked with willow and alder." Though the authors do not tell us, a large part of this improvement is due to aggressive measures undertaken by government agencies for the expressed purpose of protecting and restoring native bird life.

All the species are exceedingly well illustrated. My only criticism is the arrangement

of the plates which, though numbered, are widely scattered and hard to find *from references in the text*. Had the plates been "ganged" in one place or had the references to plates borne their opposite page numbers, they could be easily located. As it is, with only the plate number for reference, the reader cannot tell whether the plate is among the pages ahead or behind and consequently has to thumb through the pages in both directions to find it.

This most welcome guide is sponsored by the Ornithological Society of New Zealand and is essentially a compilation drawn from detailed observations and extensive field studies—many commendably penetrating—by scores of the Society's 900 members. Its consequent excellence is a great tribute to all of them as well as to the competence of its authors.—OLIN SEWALL PETTINGILL, JR.

ANIMAL BEHAVIOUR. By Robert A. Hinde. McGraw-Hill Book Company, New York, 1966; 6 × 9¼ in., x + 534 pp., 122 figs. \$10.50.

The intent of the author in writing this book has found succinct expression in its subtitle, "A Synthesis of Ethology and Comparative Psychology." He has attempted to bring together the methods and findings of psychology, physiology, and ethology in those areas where these disciplines overlap. Whether a synthesis has been achieved is a moot point, due largely to methodological and terminological differences among these fields. The author's efforts have resulted in a thorough, scholarly, critical presentation of the major findings upon this common ground.

"Animal Behaviour" is not a textbook for an elementary course in the behavioral sciences. Coverage of selected topics in depth, and the concomitant assumption of considerable familiarity with the disciplines under discussion, render it unsuitable as a text in all but the most advanced courses. The addition of a glossary of technical terms would have extended its usefulness somewhat.

It is, however, a valuable tool for the serious student of animal behavior. Discussion of controversial topics is, in most instances, keen, critical, and stimulating. Of equal heuristic value is the author's attention to important topics about which we know little and which are deserving of study. The reference list is thorough and up-to-date.

Causation and development of behavior, both taken in the broadest sense, constitute the two principal sections of this work. A brief discussion of the aims and methods of animal behavior study introduces the text, and an outline of some of the evolutionary aspects of behavior constitutes the fourth and final section. There are 28 chapters in all, and the topics discussed in each are numbered, facilitating reference use of the book. In addition, most chapters end in a clear summary of major points.

The text is illustrated by figures of varying quality, most taken from the literature. Some are well presented but others suffer from poor reproduction, both as regards darkness and size of reproduction, the latter bearing little relationship to the complexity of the figure. Complex figures are sometimes too small for easy comprehension, and simple figures are very large indeed, in some cases more than twice the size they enjoyed in the original work. More serious is the lack of sufficient explanation for a few figures, in either caption or text; these will not be of much use to the reader unless he consults the original source.

This book has been well proof-read, and there are very few errors for its size. The author index and subject and species index add greatly to the usefulness of this volume.

The recent trend in cross-disciplinary sharing of techniques and approaches by students of behavior has been hindered by the difficulty of communication between scientists

whose jargon and methods differ. However, nowhere has this trend proved more fruitful than at the Sub-department of Animal Behaviour at Cambridge. Animal Behaviour is in some sense a product of this fruition and at the same time an important step in its promulgation on a wider scale.

Dr. Hinde has done a truly impressive job, showing a remarkably broad grasp of the several disciplines in the behavioral sciences. Any serious student of animal behavior will want to read, and own, this volume.—D. W. DUNHAM.

SINGING BEHAVIOR AND ITS DEVELOPMENT IN THE SONG SPARROW *MELOSPIZA MELODIA*.

By James A. Mulligan. University of California Publications in Zoology, Volume 81; University of California Press, Berkeley and Los Angeles, 1966: 76 pp., 23 figs. (graphs and diagrams), 9 tables. \$2.00.

Mulligan's study is one of the most comprehensive of the many valuable papers on bird song which have come from Peter Marler's former group at Berkeley. The Song Sparrow is a challenging species because of the remarkable variety of songs given by each individual. Mulligan describes the song in resident populations of three races in the San Francisco Bay area and endeavors to explain song development through experiments with isolated captives.

In studying so complex a song, it would be easy to lose sight of general features, but Mulligan has chosen to emphasize temporal pattern and major types of syllables. In this way, he identifies a number of species characteristics common to all individuals. Still, the most striking feature of song in this species is that most of the 75 or more syllables and nearly all the song patterns (average 16) given by an individual are unique. Indeed, it emerges that birds of the West Coast have even larger repertoires than those studied by Mrs. Nice in Ohio or Borror in Maine. Mulligan makes the interesting suggestion that this results from the longer period of development of territorial song, largely free from singing of other species, that occurs in his study area.

Development of song was studied in wild birds as well as captives and five stages were recognized. Points of interest are that call notes were not important in song development and wild birds sang more advanced songs when stimulated by rivals. There is also a suggestion, which may prove important in studies with captives, that the singing of a bird caged below others was inhibited. That the variety of adult song cannot be explained simply by either imitation or inheritance was pointed out by Mrs. Nice but it remained for Mulligan's experiments to clarify the role of various factors in song development. Ideally, one would like to have seen larger samples than the 11 birds used. However, the results seem clear and consistent with field observations. No birds were raised from the egg in complete isolation from bird song and this reviewer is well aware of the difficulties that prevented such an experiment. An almost equally valuable result was obtained by having three birds raised from the egg by canaries. These birds were later isolated, sang vigorously, and developed essentially normal songs, though their repertoires were somewhat limited in variety. A series of isolates exposed to training songs at different ages showed that Song Sparrows can learn by imitation during a sensitive period lasting from about four to 10 weeks of age. Judging from experience in our laboratory, the daily training periods used seem rather brief but Mulligan's results show a good gradation of learning by imitation. In a final experiment, a bird which was deafened continued to sing but song development was arrested. Mulligan argues convincingly that imitation, though demonstrated, plays a minor role in song development compared with improvisation and modification of what has been learned. The experiment

with the deafened bird indicates the need for auditory feedback in development and Mulligan postulates the existence of an inherited auditory template by reference to which the young bird develops a song normal to its species. In the spring, divergence in song is thought to occur in wild populations instead of conformity by imitation as described for other species such as the Chaffinch.

Mulligan points out that individual recognition of song may be particularly important in conserving energy in dense populations of highly territorial species. While experimental evidence is lacking, I have no doubt that this is true for Song Sparrows. However, I cannot see why Mulligan suggests that such extreme variation is necessary for individual recognition since many other territorial species establish individual identity by means of stereotyped songs. The fact is, we can still only guess why some species have much more varied songs than others. Mulligan contributes some stimulating ideas concerning this problem.

Mulligan's paper is clearly written and his figures and tables are used to good advantage. Specialists will note the use of oscilligrams as well as sonograms. This paper should interest the general ornithologist since the Song Sparrow is a familiar species and Mulligan relates his results to the pertinent literature. Besides being a valuable contribution to the study of bird song, it provides a sophisticated yet readable introduction to a rapidly developing field.—J. BRUCE FALLS.

NORTH AMERICAN NEST RECORD CARD PROGRAM

As many readers are aware, the Nest Record Card Program is now completing its third year on a continent-wide basis. We appreciate the assistance of the hundreds of persons and Bird Clubs whose enthusiasm and patience make this program possible. We are anxious to solicit help from as many clubs and cooperators as possible. If you are interested in helping in this research, please get in touch with the Laboratory of Ornithology at Cornell University for instructions and nest-record cards. Before the new nesting season begins, we urge all present contributors to return any completed cards. We also request that participating clubs and birders order additional cards, if necessary, well in advance of the 1968 nesting season.—LABORATORY OF ORNITHOLOGY, CORNELL UNIVERSITY.

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