

ORNITHOLOGICAL LITERATURE

SPECIES TAXA OF NORTH AMERICAN BIRDS, A CONTRIBUTION TO COMPARATIVE SYSTEMATICS.

By Ernst Mayr and Lester L. Short. Publications of the Nuttall Ornithological Club, No. 9, 1970: 6 × 9 in., 127 pp., 8 tables. \$4.00.

For those who have thought that the taxonomy of North American birds was complete with the 1957 edition of the A.O.U. Check-list, or who had hoped that the nomenclature was now stable and could be used as an authoritative basis for all sorts of faunal and ecological listings in which stability of scientific names is desired, this book will be a shock. As the authors have demonstrated, the systematics of North American birds, although relatively well known, is far from a closed book. The biological species concept has resulted in the need for re-evaluation and a new classification approach to show the current thinking on relationships of taxa.

The new approach to the classification and nomenclature of North American birds is quite different from that of any of the several editions of the A.O.U. Check-list, although it is based on the taxa of the fifth edition (1957) of this publication. The main thrust of the Mayr-Short effort is toward showing relationships rather than differences in populations while the latter has been a more important objective of most classifications in the past. The objective of showing relationships is accomplished by not recognizing weakly differentiated geographical races by name; by combining what have been considered closely related but distinct species into polytypic species; by the use of the concept of the superspecies for those populations that are not quite closely enough related to combine in polytypic species; by recognizing "species groups" which are still less closely related but not sufficiently so for classification as distinct genera; and by making the genera more inclusive. Particular attention is paid by the authors to showing relationships of North American taxa to those of other continents by bringing them into the same groupings when this is considered justified.

Emphasis on the biological species concept as a basis for the proposed arrangement is considered by the authors to give a more meaningful classification. This concept, that "a population belongs to a given species when not isolated from it by intrinsic reproductive barriers," although not new to American systematic ornithology, is stressed more in the present paper and in most cases has resulted in recognizing more comprehensive polytypic species. Examples are uniting in single species, the Great Blue Heron (*Ardea herodias*) of America and the Gray Heron (*A. cinerea*) of the Old World; the various flickers, *Colaptes auratus*, *cafer*, *chrysoides*, *mexicanus*, and *chrysocaulosus*; and the temperate and tropical American House Wrens, *Troglodytes aedon*, *brunneicollis*, and *musculus*. In a few cases, this concept has separated what were considered single species into two separate species. The Traill's and Alder Flycatchers (*Empidonax traillii*) and (*E. al-norum*), and the Pacific and Arctic Loons (*Gavia pacifica*) and (*G. arctica*) are examples of this.

There are many instances in which North American species are grouped in superspecies, sometimes combining North American taxa with those in distant parts of the world. Following the practice of Amadon, brackets around the species name indicates this relationship. Some examples of well-known American species which have been combined with others into superspecies are: the Least and Hammond's Flycatchers, *Empidonax [minimum] minimus* and *E. [minimum] hammondii*; the martins, *Progne [subis] subis*, *P. [subis] chalybea*, *P. [subis] dominicensis*, and *P. [subis] modesta*; and the Barn Swallows, *Hirundo [rustica] rustica*, *H. [rustica] tahitica*, *H. [rustica] angolensis*, and *H. [rustica] lucida*.

The species of birds breeding in North America are listed by family groups in the first section of the book in the form of a table. By use of symbols in columns following the species name, it is indicated whether they are monotypic species, uncomplicated polytypic species, strongly differentiated polytypic species, members of superspecies, or members of species groups. A final column shows other taxa to which the listed species are related and, by symbols, how they are related. This table includes a remarkable amount of information in relatively little space. Taxonomic comments explaining the basis for the proposed arrangement appear in separate sections of the book.

Polymorphism is not considered by the authors to be a problem in understanding speciation of North American birds today as it was in former generations. The most confusing species are those that have an entire population of one morph while another population may have either another morph or both together, such as the Great Blue (Great White) Heron, the Snow (Blue) Goose, and the Common (Black-eared) Bushtit. These are considered good examples of elucidation by the biological species concept.

Phenotypic similarity resulting in sibling species is thought by the authors to be less common in birds than other groups of animals because the intraspecific recognition signals of birds (coloration, calls and songs) are perceptible by the same sense organs in man as in birds (eye and ear) as distinct from chemical signals common in mammals and insects. Those bird species that are difficult to separate morphologically are chiefly in the tyrant flycatcher and swift families although the Semipalmated and Western Sandpipers are considered as possibly qualifying as sympatric sibling species.

The subject of hybridization is discussed in considerable detail because of its obvious significance in determining the relationships as either distinct species, polytypic species or superspecies. As pointed out by the authors, there is room for considerable difference of opinion and need for much more study of the significance of such hybridization in classification. There are many borderline situations as would be expected in a concept based on evolutionary changes. The authors mention 19 situations involving 16 species where hybridization is considered sufficient (existence of a hybrid zone) to classify the taxa as elements of polytypic species. These include, among others: the Mallard, Mexican, and Mottled Ducks; the Tufted and Black-crested Titmice; the Myrtle and Audubon's Warblers; the Baltimore and Bullock's Orioles; the Gray-crowned and Black Rosy Finches; and the Slate-colored, Oregon, and Gray-headed Juncos. Also considered conspecific, although hybridization is limited or uncertain, are seven groups including: Atlantic and Black Brant; Common and Green-winged Teal; Common and Northwestern Crows; and Mourning and MacGillivray's Warblers. On the other hand, there are zones of overlap and extensive hybridization in five situations where the taxa are considered as separate species, although members of the same superspecies. These are the Mallard and Black Ducks, Herring and Glaucous-winged Gulls, Blue-winged and Golden-winged Warblers, Black-headed and Rose-breasted Grosbeaks, and Indigo and Lazuli Buntings. Thirteen other situations with more limited hybridization in contact or overlap zones which are considered as distinct species are listed, including one group the A.O.U. Check-list considers conspecific—the Yellow-bellied, Red-naped, and Red-breasted Sapsuckers.

Of the 607 species of birds breeding in North America, as recognized in the present work, 389 are polytypic. Within these 389 polytypic species, no less than 315 North American subspecies were described initially as full species. This shows the extent to which subsequent study has demonstrated the relationships between bird taxa and the usefulness of the trinomial subspecies designation in showing these relationships as well as differences.

The number of species endemic to North America, as defined by the authors, is relatively small (31.2 per cent). The more northerly species and marine birds tend to range into Asia and the more southerly species range into Mexico, Central America, and the West Indies.

The "species group" is a category inserted between the superspecies and the genus, and at the same time, considerable combination of different genera into more inclusive ones is advocated. In the present work, this has progressed to the point that 79 genera recognized in the 1931 A.O.U. Check-list are combined with other genera in that list. How the species group category differs from a finely differentiated genus or subgenus, which might be made to conform to the same group of species, is not clear.

The classification proposed by Mayr and Short is the result of analysis and interpretation of biological speciation information from a large number of cited publications. This guide to the pertinent and widely dispersed literature on the modern systematics of North American birds is a valuable contribution to ornithology. The present book should be a stimulus to other investigators to make thorough biological analyses of the groups of birds with which they are familiar and to either support or refute the conclusions of the present authors. The arrangement presented here would seem to offer an excellent starting point for a new and critical look at the classification of North American birds.—JOHN W. ALDRICH.

BIRDS OF THE CHURCHILL REGION, MANITOBA. By Joseph R. Jehl, Jr. and Blanche A. Smith. Special Publication No. 1 of the Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg 2, Manitoba, Canada, 1970: 6 × 9 in., 87 pp., 13 figures, 3 maps, paper cover. \$2.50.

Since the railroad to the port of Churchill, Manitoba, first opened up a portion of the Hudson Bay lowlands and tundra to ornithologists, the birds of the Churchill region have been extensively studied and enjoyed by professional and amateur ornithologists alike. From these studies, an ever expanding body of knowledge of the avifauna of the region has been built up, culminating, first, in the important monograph "The Birds of Churchill, Manitoba," published in 1934 by Percy A. Taverner and George M. Sutton (*Ann. Carnegie Mus.*, 23). Since the publication of this widely cited early work, and undoubtedly in no small measure as a result of it, ornithological interest in the region has continued to develop, with a corresponding accumulation of knowledge. The collaboration of Dr. Joseph R. Jehl, Jr. and Mrs. Blanche A. Smith in gathering together this recent material and combining it with their own extensive observations in an updated account of the birds of the Churchill region is therefore a most welcome contribution at this time.

Introduced by Robert W. Nero as a book that hopefully will "encourage further recognition of the value of the unique habitat" of the Churchill region, the book provides a useful modern description of the area, along with an important section dealing with recent changes in the environment. Two pages devoted to "Birding at Churchill" provide an additional feature for the field ornithologist. An appendix listing the available data for clutch sizes of some 47 species at Churchill is a useful addition. With respect to their main objective of updating the earlier (1934) work of Taverner and Sutton, the authors have drawn heavily on their own extensive knowledge of the area, and have added relevant observations, both published and unpublished, from many other biologists and ornithologists. A direct comparison with the study of Taverner and Sutton (1934) indicates

a considerable body of new material, as exemplified by the inclusion of 67 new entries in the species accounts, bringing the number of species reported from the region to a total of 209. The emphasis by Jehl and Smith on the more recent studies is also reflected in the literature cited, of which almost 90 per cent of the 93 references listed bear dates after 1934.

It would perhaps be difficult for any single observer to assess and comment on the observations presented for all of the 209 species treated in the species accounts. For those species that I have had the opportunity to study, however, I find the material presented by Jehl and Smith to be accurate, discerning, and in general quite useful. For example, in the account of the Arctic Tern (*Sterna paradisaea*), three paragraphs are devoted to feeding and nesting habits in relation to habitat and ice conditions on Hudson Bay and on the many small fresh-water ponds frequented by this species. These early spring observations, often unavailable to the many ornithologists who visit the area later in the season, are a valuable contribution. One is often left wishing that more observations of this type could have been incorporated for more of the species discussed. In other instances, however, there is an unfortunate absence of exact figures and dates, which tends somewhat to reduce the usefulness of the observations. In the account of the Oldsquaw (*Clangula hyemalis*), for example, we find the statement (pp. 29-30) that "nesting usually begins about 20 June, but completed clutches have been found as early as June (Grinnell and Palmer, 1941: 48)." Examination of the original paper cited (Canadian Field-Nat., 55: 47-54, 1941), provides the additional useful information that a clutch was in fact completed by as early as 12 June. These, clearly, are relatively minor criticisms when seen in the context of the book as a whole, more apt to be of concern to an occasional biologist investigating a particular species than to the ornithologist interested in a general account of the birds in the Churchill region.

The format of this first Special Publication of the Manitoba Museum of Man and Nature is in general attractive, perhaps the most striking and pleasing aspect being Mrs. Smith's remarkably fine color photograph of the rock and tundra habitat at Churchill that is reproduced on the cover, front and back. The text, printed on glossy paper, is clear throughout, as are Jehl's 13 black and white photographs of selected birds and habitats. Unfortunately, the binding is weak. Minor inconsistencies also appear in the text, for example, the absence of "a" or "b" to distinguish between two of Jehl's own 1968 publications (p. 75). Somewhat more significant are occasional inconsistencies between references mentioned in the text and those listed in the literature cited section. For example, Wynne-Edwards (1935), cited on p. 70, does not appear in the literature cited. On the other hand, the excellent paper by F. Cooke, dealing with the Snow Geese of La Pérouse Bay (Ontario Naturalist, 1969 (4): 16-19) is listed in the literature cited section, but I failed to find mention of it in the text, and it does not appear where it might be most expected, under the description of *Chen caerulescens*, on page 25. These inconsistencies, although unnecessary, are fortunately rare, and do not detract significantly from the overall attractiveness and usefulness of the publication.

In sum, there can be little doubt that Jehl and Smith have done an entirely credible and useful work. With the current environmental crises threatening many avian habitats, particularly those of the fragile arctic regions, it seems imperative that a greater understanding and appreciation of these areas be attained without delay so that enlightened preservation and survival measures can be taken when needed. It is to be expected that books such as "Birds of the Churchill Region, Manitoba," will go far towards providing the necessary background knowledge and impetus to meet these challenges.—ROGER M. EVANS.

A GUIDE TO THE BIRDS OF SOUTH AMERICA. By Rodolphe Meyer de Schauensee. Livingston Publ. Co., Wynnewood, Penna., 1970: 9 × 6 in., xiv + 470 pp., 50 pls. by E. L. Poole and J. R. Quinn, and 22 bl. and wh. drawings by G. M. Sutton. \$20.00. (Three pages of "Further Addenda and Corrigenda" attached).

Never before has there been available a concise, illustrated guide to the birds of South America combining descriptions of *all* species in one volume. The need for such a guide book increased considerably during recent years when previously remote rainforest streams, pampa plains, and Andes cordilleras were placed within easy reach of the modern jet traveler. Meyer de Schauensee's meticulously prepared new book goes far to satisfy both professional scientists and amateurs alike.

A brief introductory section explains altitudinal zones in the mountains and the habitat terms used in the text. Descriptions of a total of 2853(!) species are given on only 427 pages of text, and 73 casual, accidental, doubtful, and introduced species are listed in an Appendix. The short but mostly adequate description of each species (and subspecies where recognizable in the field) is followed by an outline of the range and an indication of the preferred habitat. Notes on behavior or voice are not included (not known in many cases) but a brief biological account precedes each family section. Elimination keys and illustrations serve as an aid in species identification. These novel keys (used by the author also in his book, "The Birds of Colombia," 1964) lead to species groups with certain common characters and are very useful in the field, although difficulties are to be expected in large families. About 680 species (24 per cent of the total bird fauna) are illustrated on 31 color plates, 19 black and white plates (conveniently bound together in the center of the book) and 22 text figures. The plates are the work of J. R. Quinn (30 plates) and E. L. Poole (20 plates: these also appeared in the author's previous volume on Colombia). Although occasionally reproduced somewhat pale, the plates are appealing to the eye; they are mostly adequate as an identification tool except perhaps plate 13 or those 7 plates which show only the heads of 141 species (I doubt their usefulness in the field). The ink drawings by G. M. Sutton are of the usual excellence. High reproduction cost probably precluded adding more plates and three-quarters of the species described in the text are left unillustrated.

The nomenclature and systematic arrangement follow mostly the author's useful list, "The Species of Birds of South America" (1966), written in collaboration with E. Eisenmann. Deviations include the following cases: The family "Conopophagidae" has been dissolved and *Conopophaga* included with the Formicariidae and *Corythopsis* with the Tyrannidae (following the proposal by Ames et al., Postilla, 114: 1-32, 1968). Several genera previously placed in the Cotingidae have now been transferred to the Tyrannidae, although the author had recommended in 1966 "to leave the family [Cotingidae] in its traditional arrangement awaiting a complete study." The resulting wide separation of the close relatives *Rhytipterna* (included in the Tyrannidae) and *Lipaugus* (left in the Cotingidae) seems very unsatisfactory. Inspection of Ames' recently published work (Peabody Mus. Nat. Hist. Bull., 37: 160-161, 1971) reveals that the syringeal structure of *Lipaugus* may indeed be similar to that of *Rhytipterna*, although further examination of additional material is needed.

I list below a few suggestions and minor corrections (mainly concerning details of distribution) which might be taken into consideration in preparing a second edition of the guide book: *Picumnus subtilis* Stager (Contrib. Sci. 153, 1968) from eastern Peru apparently has been overlooked. The habitat of *Laterallus viridis* is not like that of the other species of the genus but thickly overgrown wasteland far from swamps and marshes (Haverschmidt "Birds of Surinam," 1968, p. 89). *Trogon comptus* has been collected in

western Ecuador (Gyldenstolpe, Ark. Zool., 2: 91, 1951). The record of *Galbula pastazae* from the lower Rio Purus, Brazil (Todd, Ann. Carnegie Mus., 30: 9, 1943) is not valid as it is based on a female of *G. cyanescens* (pers. examination). *Bailloni* *bailloni* occurs at Puerto Bertoni in easternmost Paraguay (Laubmann, Vögel, Paraguay) as well as in Misiones Province, northern Argentina (Olrog, Op. Lill. 9, 1963; Eckelberry, Wilson Bull., 76, 1964). *Rhamphastos brevis* does not occur in eastern Panama; because of its croaking voice, bill shape, and small size I consider this species as a member of the *R. vitellinus-culminatus* group and unrelated to the larger forms *R. swainsonii-ambiguus* with a yelping voice. The toucan shown opposite the title page is identified on page 182 as the red-billed *Ramphastos tucanus*, although it looks to me more like the black-billed *R. cuvieri* (which de Schauensee keeps specifically distinct). *Celeus grammicus* has not been recorded from the Guianas. *Certhiaxis mustelina* occurs in Amazonas Department, Colombia (Olivares, Caldasia, 10: 50, 1967). The occurrence of the southeast Brazilian *Iodopleura pipra* in Guyana is at least questionable. White-rumped populations of this species may have inhabited or still inhabit Minas Gerais, Brazil, whence no specimens are presently available (Camargo et al., Pap. Av. São Paulo 16: 1964). The types of *I. p. leucopygia* (supposedly from "British Guiana") may have had a similar fate as those two skins of another strictly southeast Brazilian species, *Cotinga maculata*, in the collections of the American Museum of Natural History that are also labelled "Demerara," Guyana, which is obviously incorrect. *Attila torridus* has been recorded from Colombia (Nariño; Blake, Lozania, 11, 1959). One of the probable parent species of the hybrid form *Pteroglossus "olallae"* is *P. bitorquatus* (instead of *P. torquatus*, see p. 432). It would be desirable to indicate the questionable status of *Fulica "ardesiaca," Anodorhynchus "leari," Ramphastos "aurantiostrois"* and perhaps *Pipra "obscura"* which are included as good species in the text.

The book under review hopefully will encourage work on South American birds at the species level. To further enhance its usefulness as a research tool it would be helpful in future editions to have the species grouped, where feasible, in superspecies even if only on a tentative basis. This would bring out parapatric or allopatric distribution patterns of closely related forms and, with appropriate remarks in the Introduction as to the need for information on the interrelationship of known or supposed members of superspecies, would guide readers to interesting research problems. Any short term visitor to South America can make substantial contributions to the knowledge of Neotropical birds at the species level if he chooses the right species in the right area. Grouping of the species into superspecies would also bring out more clearly the poorly understood fact that a comparatively large number of species replace each other geographically in a uniform environment, presumably as a result of ecologic competition. Such a grouping in zoogeographic species would also help to see the South American bird fauna in more proper proportions compared to the bird faunas of other continents.

The guide book is well produced and clearly printed. Although insufficient and partly inadequate illustrations render field identification of certain passerine groups quite difficult, both professional ornithologists and amateurs will be grateful to the author for having undertaken the immense task of compiling this meticulous and up-to-date guide to the birds of South America.—JÜRGEN HAFFER.

ROBERTS BIRDS OF SOUTH AFRICA, 3rd edition. Edited by G. R. McLachlan and R. Liveridge. John Voelker Bird Book Fund and the Central News Agency Ltd., Cape Town, 1970: 8¾ × 6 in., xxxii + 643 pp., 56 col. pl., 2 end piece maps. R6.75 (= \$9.45).

This third edition of Austin Roberts' classic "Birds of South Africa" is essentially an updating of the second edition (1957). To quote the editors (p. xv) "The third revision

provides mainly additions and corrections in distribution, although breeding seasons, incubation and nestling periods, and even new races, are all added. Several species new to our sub-region are also added. The authors wish to draw attention to the fact that changes in distribution do not necessarily imply that the bird populations have changed."

The original plates from the first edition (1940), and therefore the original numbering and order of species, are still used. Since Austin Roberts had his own original ideas on classification, this leads to some unfamiliar families and placements of species. Attention is called to most of the anomalies either in the common names of the birds or in the text, and they detract very little from the usefulness of the book. The text has been entirely reset with new paragraph headings—Identification, Distribution, Habits, Food, Voice, Breeding—making the included information more readily accessible. The distribution maps, which were an innovation of the second edition, have been carefully revised, and are much more trustworthy than the written ranges. The main omission that I noticed was the failure to make use of the information on intra-African migration that has been brought out by the active South African banding program.

It is difficult for us to realize the impact and influence that "Roberts Birds of South Africa" has had on bird study in southern Africa. "South Africa," to Roberts, was that area to the south of the Cunene and Zambesi rivers, and when I was travelling in Rhodesia and Botswana 10 years ago there was hardly a home that I stopped in that did not have a well-worn copy in evidence. Over 60,000 copies of the first two editions were sold, which, in an area with an English speaking population of only 4,000,000, is the equivalent of 2,700,000 copies in the United States. Although other bird books are now becoming available for the same area, Roberts will always be a necessity, if for no other reason than that his names are now the universal vernacular names for the region.—MELVIN A. TRAYLOR

ANIMALS IN MIGRATION. By Robert T. Orr. Macmillan, New York, 1970: 7 × 9½ in., 15 + 303 pp. \$12.50.

In 1956 the Macmillan Company published in the Collier Books series a paperback, "The Great Migrations of Animals," by Georges Blond. In this book Blond as a writer and not as a scientist treated in an exciting and often dramatic manner the migrations and journeys of locusts, salmon, eels, geese, buffaloes, and lemmings. His book was both pleasurable and insightful. After a period of fourteen years the same publisher has put out another book on the migration of animals, but this time the author is a scientist and his stated purpose in writing the book is to gather together under one cover the basic principles and recent discoveries in animal migration. Orr directs his book to mammalogists, ornithologists, herpetologists, ichthyologists, entomologists, and zoologists specializing in invertebrates. He feels there is a separation of those studying migration because they tend to stay within their own field of study and restrict their activities to those animals with which they are most familiar. I think Orr is underestimating the serious students of migration.

Most previous books on migration have been rather comprehensive accounts dealing with a particular group of organisms (e. g., insects, fish, birds), and Orr's attempt to amalgamate these works and arrive at the fundamental principles governing migration in a book of approximately 300 pages is only partially successful.

The book suffers in a number of places from an incomplete coverage of the literature and an inadequate reading of the literature covered, which in turn weakens the author's attempt to elaborate basic principles. For example, in his discussion of the influence of wind on bird migration (p. 50), Orr concludes that south winds in the autumn direct

migration to the north in the southern United States, but at more northern latitudes southerly winds cause grounding and a cessation of migration temporarily. Orr overlooked an important paper by Drury and Nisbet (1964) where they pointed out that northeasterly autumnal movements of landbirds in New England occur with following winds throughout the fall. On the same page Orr states that Lowery and Newman (1966) found that stable air aloft may be requisite for heavy autumnal migrations, but in Lowery and Newman's paper they found this to be the case in only one of four nights studied.

Although the bibliography has 349 references, several statements are made in the book without supporting citations. On page 60 Orr says that males of the Long-billed Marsh Wren (*Telmatodytes palustris*) arrive on the breeding grounds ten days or so before the females, and during this interval they spend much of their time building dummy nests. This is important information and should have been documented. Mention is made of occasional nocturnal migrations in butterflies, but unfortunately no references are given to permit the interested reader to delve further into the matter. Orr claims that the Eastern Kingbird (*Tyrannus tyrannus*) is a diurnal migrant, again without documentation, but Stoddard and Norris (1967) have recovered the bodies of 23 individuals of this species that collided during nocturnal migration with a TV-tower in northwestern Florida. The same number of Great Crested Flycatchers (*Myiarchus crinitus*) were picked up by Stoddard and Norris during the same period of time, and this species is commonly accepted as a nocturnal migrant (see illustration on page 71 in Fisher and Peterson, "The World of Birds," 1964).

In the center of the book there are 19 color photographs on eight pages. The reason for their inclusion in a book of this nature is puzzling. They have undoubtedly increased the cost without adding very much to the book. Moreover, the subject matter of six of the color plates is duplicated in the black and white photographs scattered throughout the text (i. e., color photographs 1, 2, 5, 6, 11, 12, are very similar to the black and white photographs on pages 91, 94, 200, 136, 150, and 151, respectively). Migration maps are numerous in the text, but no graphs or tables are presented. The index is wrong in several places. For example, according to the index the term *Zugunruhe* (migratory restlessness in caged migrants) is first used on page 39, but the term actually first appears in the text on page 71, and its usage there is misleading.

The sections on the migrations and movements of mammals are good, and this is clearly where Orr has made his greatest contributions. The book's format is attractive and will undoubtedly appeal to the interested non-professional, but there is almost too much factual material for this readership. Professionals not seriously interested in migration will probably read the book and enjoy it, but serious students of animal migrations should probably save their \$12.50.—SIDNEY A. GAUTHREAUX, JR.

STUDIES IN THE LIFE HISTORY OF THE SCARLET Tanager, *PIRANGA OLIVACEA*. By Kenneth W. Prescott. New Jersey State Museum Investigations No. 2, 1965: x + 159 pp., 2 pls., 15 figs., 12 tables. \$2.50.

This work represents a major contribution to our knowledge of the Scarlet Tanager, one of the most widely known American songbirds. The tanager's arboreal habits and perhaps a scarcity of numbers probably explain why, previous to Prescott's work, comparatively less was known about it than about other familiar passerines. The style in which this study is presented makes it quite readable, although it is perhaps uncritical and vaguely anthropomorphic in some cases. The book is well organized, and along with two fine

colorprints of young tanagers by George Miksch Sutton, it makes a neat, attractive volume.

Most of the work was done in southern Michigan in 1947, 1948, and 1949. Males first arrive in early to mid-May and soon begin to sing from conspicuous perches in the tops of large trees. Females arrive several days later and, Prescott suggests, initially locate the males visually as the latter are easily seen on their tree top perches. After the females arrive, singing is no longer done from such high perches and its intensity decreases. To my mind, at least, this evidence raises the question of whether high visibility leading to a rapid acquirement of a mate is the primary selective pressure responsible for the spectacular plumage of the male Scarlet Tanager or whether some other factor such as a species isolating mechanism is more important. Nest construction is done entirely by the female although the male may influence her in the choice of site. Comprehensive descriptive data on the nest site are presented and indicate that nests are usually placed at openings in the forest.

Incubation rhythm and the factors that influence it are dealt with at some length. Data on clutch size and/or success rate, are presented for only 17 nests. The small number of nests studied is, I feel, the major shortcoming of the entire study. Information on other important aspects of nesting, such as feeding the young and nest sanitation, is also presented.

General behavioral aspects including vocalizations and preening are described in varying detail. One significant point apparently unrecognized prior to this work is that most if not all female tanagers sing during the breeding season. The female's song is similar to the male's, and antiphonal singing occasionally occurs. A comprehensive section deals with other vertebrates found in the tanagers' territory and the interactions, if any, that Prescott observed.

This study contains much significant information on parasitism by Brown-headed Cowbirds (*Molothrus ater*). Eleven of 14 (79 per cent) nests studied by Prescott contained cowbird eggs. Almost as many cowbirds (seven) fledged from successful nests with known contents as did tanagers (eight). The detrimental effects of cowbird parasitism are clear, and apparently are due largely to egg removal by adult cowbirds and/or decreased egg production by the female tanagers. Prescott suggests that if tanagers desert their nests in response to cowbird parasitism, this should be considered a detrimental consequence. I believe it is more meaningful to consider nest desertion as an adaptive response to cowbird parasitism because it gives the birds an opportunity to undertake another and possibly unparasitized attempt at breeding. During his studies, Prescott was fortunate enough to witness a female cowbird in the act of parasitizing a nest. To my knowledge, this observation is unique in that the cowbird removed a tanager egg within seconds of depositing her own egg. Other workers (Hann, Wilson Bull., 53: 211-221, 1941 and Mayfield, The Kirtland's Warbler, Cranbrook Inst. Sci., Bloomfield Hills, Michigan, 1960) have found that host eggs are removed either the day before, several hours after, or the day after the cowbird egg is deposited.

Occasional aspects of this work are marred by uncritical methods and deductions. The statements that the singing rate of the male falls off when the females arrive and that in general, singing rate is constant throughout the day would be more valuable if they were backed up with quantitative data. Prescott states that the cowbird is recognized as an enemy since tanagers usually attack female cowbirds which enter their territory. Yet instances of invading cowbirds not being attacked are noted, as are cases of attacks by the tanagers upon nonparasitic birds such as the Catbird (*Dumetella carolinensis*) and the Veery (*Hylocichla fuscescens*). In an interesting section on predation of tanager

nests by Common Crows (*Corvus brachyrhynchos*) Prescott states that crows employ two different methods to hunt tanager nests. However, it is by no means certain that the activities Prescott observed the crows engaging in were designed to reveal the locations of nests.

One of the most valuable assets of this work is the large number of interesting, anecdotal types of observations. Nest predation is a significant phenomenon yet is rarely witnessed. Prescott describes four instances in which he observed nests being preyed upon. The selective advantage of keeping females from copulating with other males is an often cited function of territoriality. Prescott describes a relevant observation in which a strange male invaded a territory, copulated with the female, and then was chased off by the resident male as soon as the latter appeared on the scene. Probably most persons interested in avian breeding ecology and behavior will find specific observations such as these, which are of value to their own special interests. Thus, besides being a source of significant information on Scarlet Tanagers and Brown-headed Cowbirds, this study contains much additional material of value to ornithologists.—STEPHEN I. ROTHSTEIN.

THE RANDOM HOUSE BOOK OF BIRDS. By Elizabeth S. Austin and Oliver L. Austin, Jr. Illustrated by Richard E. Amundsen. Random House, 1970: 8¼ × 11¼ in., 131 pp., many color paintings. \$4.95.

A pleasant family reference book, "Birds" is made up of alphabetically listed descriptions of birds (such as, in the D's, Dippers, Dodos, Domestic Birds), interspersed with a few general headings (for example: Feathers, Voice, Waterfowl). All the bird families of North America are included as are the most interesting or popular birds of the rest of the world. The illustrations, which unfortunately do not include all the species described in the text, are generally quite nice; there is, however, an extremely odd Great Blue Heron. A good deal of information, all carefully indexed, is available here to the grade four through junior high students, who will perhaps be the book's chief readers. This would be a good book for school libraries as well as for families.—SALLY LAUGHLIN.

FLASHING WINGS. THE DRAMA OF BIRD FLIGHT. By John K. Terres. Doubleday and Co., Inc., New York, 1968: 9½ × 6½ in., xiv + 177 pp., 15 illus. by Robert Hines. \$4.95.

This interesting and informative book opens and closes with the story of Mr. Terres's pet Peregrine Falcon, Princess. The chapters in between deal with such topics as How a Bird Flies, Soaring and Gliding Flight, Eagles Over Hawk Mountain, Hovering Flight, Dangers of Bird Flight, and so on.

On this framework is built a rambling presentation of a great variety of anecdotes and observations by the author and many other students of birds. The author is enthusiastic and interested in his subject, and he conveys much delight in the accomplishments of birds.

The name of Crawford H. Greenewalt is consistently mis-spelled "Greenawalt."

"Flashing Wings" could serve as something of an encyclopedia of popular material on bird flight and some other facets of bird life.—ERNEST P. EDWARDS.