

REVIEWS

The Comparative Biology of the Meadowlarks (*Sturnella*) in Wisconsin.—Wesley E. Lanyon. Publ. Nuttall Ornith. Club No. 1, Cambridge, Mass., published by the Club. [iv] + 67 pp. 31 figs. 1957. (Procurable from Mass. Audubon Soc., 155 Newbury St., Boston, Mass.) Price, \$2.00 (cloth), \$1.50 (paper). There is a critical shortage of publications which will accept long papers. The Nuttall Ornithological Club is to be congratulated on initiating such a series, made possible through the generosity of the late James Lee Peters. They are also to be congratulated on selecting Lanyon's important study of the meadowlarks in Wisconsin for the first number of the series.

Since Audubon discovered the Western Meadowlark (*Sturnella neglecta*) in 1844, there has been a controversy over whether it and the Eastern Meadowlark (*S. magna*) should be treated as full species or as subspecies. In his studies in the field and on hand-raised birds, Lanyon has analyzed vocalizations of the adults and investigated the development of vocalizations in young birds. He has compared the ecological preferences of the two forms (more extensively reported in *Ecology*, 37: 98–108, 1956) and made detailed comparative studies of territory, pairing, courtship, and breeding biology. From these studies, Lanyon concludes that the Eastern Meadowlark prefers more moist situations than the Western Meadowlark; that the very different call notes of the two species are inherited (or, if learned, learned during the nestling period), whereas the primary songs are learned; that behavior associated with the establishment and maintenance of territory and with pair formation and courtship is essentially similar in the two species, as is their breeding biology. Differential habitat preferences reduce the number of interspecific contacts, but it is the role of the female in responding to males rendering the proper set of auditory stimuli (evidently in this case the species-specific call notes rather than the songs) which prevents the formation of mixed pairs and which thus maintains the two forms as good species in the north-central United States.

This study was well conceived and executed. It not only presents the solution to a century-old problem but also is an important contribution to the field of speciation. The only serious criticism, I think, should be addressed to the editors of the Nuttall Club who might well have planned more carefully the lay-out of their new series. The small pages will not prove economical in the long run, and the narrow margins not only are unattractive but also are insufficient for proper binding. Neither the preliminary pages nor the pages of plates (referred to as "figures") are numbered. The price has not been included nor has the name and address of the organization or person handling sales of the series.—ROBERT W. STORER.

A Coloured Key to the Wildfowl of the World.—Peter Scott. The Wildfowl Trust, Slimbridge, Gloucestershire. 96 pp., 23 plates. 1957. Price, 9 s. 6d. This hand-guide to all the species and subspecies of the Anatidae is an elaborated version of an earlier black and white guide, mainly for use in assisting in the identification of live birds in the incomparable waterfowl collection at the Wildfowl Trust, but also of great value as a guide in any zoo or even under field conditions. A total of 147 species, comprising 247 forms, are shown, including both sexes where they differ noticeably, as well as major color phases of the polymorphic forms such as *Anser c. caerulescens* and *Chloephaga p. picta*. Pages facing

the plates provide the Latin and common English names, and also give an abbreviated statement of range. Immature and "eclipse" plumages are not shown. The arrangement and systematic treatment is essentially that proposed by Jean Delacour and Ernst Mayr in 1945 (Wilson Bull., 57: 3-55), with a few recent modifications made by Delacour in his "Waterfowl of the World" monograph. Thus the torrent duck tribe "Merganettini" is merged with the Anatini, whereas the eiders are given a tribal status (Somateriini) and are placed between the Anatini and the Aythyini. Detailed head drawings of the white swans, snow geese, eiders and scoters greatly assist in recognizing their diagnostic criteria. Domestic varieties are also presented for comparison. Although the quality of the color reproduction cannot, of course, compare with Scott's plates in Delacour's monograph they are nevertheless a great improvement over the earlier black and white drawings and are entirely adequate for species identification.

In addition to the color plates, a unique and imaginative key is provided, with marginal sketches illustrating pertinent features. This key, prepared by Hugh Boyd, allows one to select any of seven categories (size, shape, bill shape, plumage color, bill color, voice or gross behavior) as a starting point for narrowing down the number of possible species, and one may quickly find the plate which illustrates the species in question. Unsuccessful users of this key are finally advised to consider the possibility of the unidentified bird being immature, in eclipse plumage, a mutant, hybrid, or descended from domestic stock, and are given hints for the recognition of such birds. A clear and concise account is given concerning the understanding and importance of scientific classification and Latin names. The plates are extremely well indexed, both by common and colloquial English as well as Latin names, the latter including currently used generic, specific and subspecific epithets, in addition to older names which are synonymized in the volume. These new features add greatly to the guide's value and usefulness. It is somewhat more pocket-sized (5½ by 8½ inches) than the earlier edition, the pages are of heavy stock, and the covers are of substantial cardboard.

A study of the plates will prove a rewarding pastime not only to the waterfowl enthusiast but also the student of avian evolution, who may readily perceive the magnitude of geographic variation (e.g., *Merganetta*, *Branta canadensis*), effects of insular isolation (*Anas acuta eatoni*, *Anas platyrhynchos laysanensis*), and remarkable intrageneric plumage diversity (*Anas*, *Mergus*) to be encountered in the family Anatidae.—PAUL JOHNSGARD, *Department of Conservation, Cornell University, Ithaca, New York.*

The Behavioral, Ecological and Morphological Characteristics of Two Populations of the Alder Flycatcher, *Empidonax traillii* (Audubon).—Robert Stein. 1958. New York State Museum and Science Service, Bulletin Number 371, Albany, N. Y. 63 pp., 6 text figs. and photos. Distinct differences in song among the species of the genus *Empidonax* have long been considered the most practical means of field identification of this difficult group. In eastern North America each species has a single basic song pattern except the Alder Flycatcher (*E. traillii*) which has two song types, popularly referred to as "fee-bee-o" and "fitz-bew." Using objective analytical procedures, Kellogg and Stein (1953, Wilson Bulletin 65: 75-80) established the reality of the existence of these song types and suggested a constancy of each pattern over a large geographical area. The range of the "fee-bee-o" pattern is considered to be Canada and the northeastern United States while the "fitz-bew" pattern is restricted to the United States and especially west

of the Alleghany Mountains. In an effort to understand better the relationship between these unique segments of the Alder Flycatcher complex, Stein made an intensive three year field study of the two song-type populations in an area of sympatry near Ithaca, N. Y. His results appear in this well-edited New York State Museum Bulletin.

The two major contributions of this significant work are (1) the demonstration of population discrimination among the males, and its probable basis and (2) the analyses of morphological characters of two series of males of known song patterns. The behavioral response to the playback of recorded songs showed that males of each of the two song-types could recognize the difference between these song patterns, reacting positively to their own and negatively to the opposite pattern and to the songs of other *Empidonax*. The males, then, were behaving as distinct species in this respect.

Two series of 30-40 males of each song-type were compared with regard to morphological characters. The statistical analyses suggest that the two samples were probably taken from two populations, thus supporting the results of the playback experiments. There were slight, though significant, mean differences in length of tarsus, length of bill, and chord of wing. As might be expected, however, the nearly complete overlap of all linear measurements makes the identification of single specimens impossible on mensural criteria alone. Since Stein's analyses are based on the assumption of a normal curve distribution of his characters, one wonders whether possible bias may have been introduced by using a heterogeneous "fee-bee-o" sample, which included not only breeding individuals but also migrants in passage to more northerly areas. Comparisons of other aspects of the biology of these populations were less revealing: color and size of eggs, nesting chronology, habitat preference, structure and size of nest, and size of territory.

The consistent differences of voice, the "statistically significant" differences in morphological characters, and especially the negative response to the playback of the opposite song pattern led Stein to conclude that his study populations were reproductively isolated and represent distinct species. Unfortunately the above findings apply only to males. In a territorial species where the females have an active role in pair formation, any conclusion with regard to reproductive isolation is tenuous without some basis for distinguishing between the females of the supposed populations or for determining how females react to the different vocalizations of the males. This is offered not in deprecatory criticism of the study but to remind the reader of the tremendous complexity of the problem and the challenge that it offers to the student of field biology and experimental systematics. Stein is well aware of this complexity and is continuing his research. Knowledge of the status of the two song-types in other areas of sympatry, and especially information on the behavioral and morphological differences of the females mated to males of known song patterns will do much to strengthen his thesis.—W. E. LANYON.

The Breeding Biology of the Chimney Swift.—Richard B. Fischer. 1958. New York State Museum and Science Service, No. 368. 141 pp., 23 photographs, 6 graphs, 17 tables. In the course of the last 20 years there has been a steady increase in the number of birds subjected to an intensive study of breeding and related habits, with the result that far more is known in this important field than before. The Chimney Swift (*Chaetura pelagica*), is the latest, and a worthy, addition to this list, and the present study covers all features of the nesting season

from the return in spring to the departure of the young. The similarities with, and the differences from, the two well-studied European species of *Apus* are of special interest. Annual mortality, apparently around 50%, is much higher than in *Apus*, and clutch-size is also much higher. Copulation was observed only at the nest, but I find it hard to believe that *Chaetura* should differ from *Apus* in not also doing so on the wing. The collection of twigs for the nest in the feet has no parallel in *Apus*, nor, so far as is known, has the remarkable habit, recorded by Dexter and here confirmed, that an extra bird may attach itself to a breeding pair and help to feed their young; in one case the third bird was a yearling raised by the parents in question in the previous year. The Chimney Swift regurgitates food for its young during the first week of their life, a habit apparently absent in *Apus*. 86% of the young flew successfully, and there was no variation with the weather, which is so marked a feature in *A. apus* in England (near the edge of its range). Fledgling Chimney Swifts, unlike *A. apus* but like *A. melba*, return to the nest for some days after their first flights outside. In other respects the life history is very similar to that established for the Old World species of *Apus*. The booklet is illustrated with excellent photographs of both parents and young. It is to be hoped that someone will now make comparable studies of *Cypseloides* and *Aeronautes* spp.—DAVID LACK.

Revision und Entstehung der Arkischen Vogelfauna.—Hans Johansen. Pt. 1. Einführung und Revision der Gaviae-Galli. 1956. Acta Arctica, 8: 1-98. Price, 30 Danish kr. Pt. 2. Revision der Grues-Passerer und Entstehung der Arktischen Vogelfauna. 1958. Acta Arctica, 9: 1-131. Price, 35 Danish kr. Societas Arctica Scandinavica, Zoological Museum, Copenhagen, Denmark. (In German; extensive English summary.) This "Revision and Origin of the Arctic Bird Fauna" treats all species breeding in the Arctic (defined as the area north of the polar tree-line) from the viewpoint of distribution, geographical origin, and phylogenetic relationship. For each species (or species group) considered truly Arctic a circumpolar map is provided, indicating the distribution of the various forms. The author's familiarity with the considerable Russian literature on Arctic birds, listed in the bibliography, makes this work of special value.

As a foundation to the systematic treatment, there is an elaborate preliminary discussion of the many drastic climatic and ecological fluctuations in the Arctic during Pleistocene and Recent times. Johansen points out that tundra-inhabiting species had their ranges restricted and broken up not only during the periods of glaciation, when much of the Arctic was covered with ice, but also during the height of the interglacial periods, when forest covered most of the present tundra and coastal areas were reduced by the rise in sea-level. The Recent "Atlantic Warm Period" (between 7,000-3,000 years ago), when the climate was warmer than today, also affected Arctic bird distribution. Speciation in the Arctic is considered to be largely the consequence of isolation in tundra refugia, both north and south of the glaciated areas, during the Pleistocene. In such refugia isolated populations developed differences, which, in many cases, resulted in a failure to interbreed freely when changed conditions enabled the allied populations to expand their ranges and meet again.

The treatment of the puzzling relations between the Herring Gull (*Larus argentatus*) and its allies (*thayeri*, *glaucoides*, *kumlieni*) in the American Arctic is interesting, though, of necessity, highly speculative. He suggests that *kumlieni* (southern Baffin Island) resulted from hybridization between *thayeri* and *glau-*

coides, though today the supposed parental stocks appear to be no longer in contact. His opinion that *L. a. smithsonianus* developed about the Bering Straits during the last ice age and later spread from west to east seems very questionable to this reviewer; the available facts indicate just the opposite. *Smithsonianus* is today primarily a form of the Atlantic watershed and its restricted range in the Pacific northwest and in the Arctic suggests a recent extension—similar to that of other expanding eastern American birds. The closest affinities are surely with the European nominate race, *argentatus*, from which the differentiation of *smithsonianus* is so slight that one or the other must have been derived from a relatively recent crossing of the Atlantic, possibly post-glacial. In assuming a Pacific derivation for the subspecies *smithsonianus*, Johansen may have been misled by a reference in the 1931 edition of the A.O.U. Check-list to a supposed Pleistocene record from Oregon of *L. argentatus*—which proves not even to be a *Larus* (Wetmore, Smith. Misc. Coll., 131, no. 5: 76, note 3, 1956).

Students will doubtless disagree with some of the phylogenetic speculations, but this does not detract from the usefulness of the distributional data and maps in this fine work.—E. EISENMANN.

Birds of Maryland and the District of Columbia.—Robert E. Stewart and Chandler S. Robbins. N. A. Fauna No. 62, Government Printing Office, Washington; pp. i-vi, 1-401, 1 pl., two general and 67 range maps. 1958. \$1.75.—This is one of the best and most useful recent state books. Unpretentious in appearance, bound only in stiff wrappers, having no color plates and omitting the general information that can easily be found elsewhere, it provides in an adequate way the information really needed about the area covered. The species material is full of detail; the biotic regions are discussed at length; and a historical sketch and skeleton bibliography are included.

There are questions that can properly be raised. Considering the difference in type and quantity of past work in the two political areas covered, one wonders if it might not have been better to have limited the scope of the book to Maryland. Since the District of Columbia was included, the bibliography might well have been more complete. For the reviewer a more serious question concerns the ignoring of subspecies. The authors made this decision on what they consider good grounds, but it seems an unfortunate decision. There is probably no region in America from which so many specimens are available for subspecific comment. Further, there are certain species, such as the Blue-winged Teal and the Swamp Sparrow, for which the Maryland status cannot be discussed intelligently without such comment. For lack of it, the breeding map of the Swamp Sparrow is simply a puzzle. Still, the main thing to be said about this book is that it is an admirable contribution to regional ornithological literature, and one which will always be useful.

The thing that will give the book permanent value and its wellnigh unique characteristic is the extent of its emphasis on quantitative population data. No other state book gives such a vast number of numerical counts. This will constitute its chief usefulness for both present and future workers in the area. There are breeding counts for various parts of Maryland for all breeding species (32 counts, for example, for the Red-eyed Vireo) and migration and winter counts for many other species. Another interesting feature is the amount of banding data presented.—J. J. MURRAY.

Listening in the Dark. Orientation by Sound in Bats and Men.—Donald R. Griffin. 1958. 413 pp., 16 photo. pts., 15 text figs. Yale Univ. Press., New Haven, Conn. \$7.50. Here is a remarkably stimulating book. The main subject is bats, particularly how they use sound to find their way, and probably their prey, in the dark. By ingenious experiments Griffin and his associates determined that bats (except for a few large-eyed species) orient by uttering ultrasonic bursts of short clicks, whose echoes (generally inaudible to human ears) enable the bats to avoid obstacles and even to differentiate between objects. One chapter is devoted to echolocation by birds. This has been determined of the South American Guácharo or Oilbird (*Steatornis*), which nests in the Stygian blackness of deep caves, and may prove to be true of some of the Oriental Cave Swiftlets (*Collocalia*)—famous as the source of birds'-nest soup. The reviewer has often wondered why, with an abundance of nocturnal insects, there should be so few nocturnal birds. Griffin asks, rather, why there should be no diurnal bats. He suggests that the nocturnal habits of many flying insects may be an adaptation to escape birds and that bats evolved from nocturnal insectivores after birds, including raptors, had already developed from diurnal reptiles. Echolocation by blind persons is also treated.

This book is written in a style designed for the science-minded general reader, though supported by considerable detail as to the experiments—together an intellectual adventure.—E. EISENMANN.

Suplemento de Las Aves de Chile.—J. D. Goodall, A. W. Johnson, and R. A. Philippi B., with collaboration of Francisco Behn and Guillermo R. Millie. 1957. Suppl., pp. 349–425; 26 ills., 1 col. (Vol. I reprinted, including supplement, 441 pp., cloth or paper cover.) Obtainable from A. W. Johnson, c/o Katz Johnson, S. A. C., Casilla 327, Santiago, Chile.—The first volume of the useful handbook of Chilean birds (see reviews of the two volumes, *Auk*, 64: 149, 1947; 70: 505, 1953) has for some time been out of print. In reprinting it, the authors took the opportunity to include a supplement (available separately), with corrections, changes of nomenclature, and numerous additions, not only of species and subspecies previously unrecorded, e.g., the northern *Vireo o. olivaceus*, but also a great deal of new information on other species, particularly the three flamingos. The following subspecies are described as new: *Phrygilus gayi minor* by Philippi and Goodall, and *Milvago chimango fuegensis* by Johnson and Behn. "Las Aves de Chile" remains the only modern descriptive work providing means for identification of the birds of any South American country. It is much more than an identification guide, for it attempts to summarize all available Chilean life history data on the species treated. The text is in simple Spanish, and the many illustrations add greatly to the usefulness of this work.—E. EISENMANN.

Pititsy Sovetskoi Arktiki [Birds of the Soviet Arctic].—S. M. Uspenski. 1958. *Academiya Nauk S.S.S.R. Naukno—popolyarnaya seriya* (Popular science series), Moscow, 1958, 166 pp., 316 figs., other figs. (not numbered), 2 col. pls. Paper cover. Price, 3 roubles. (Sold by Am-Rus Literary and Music Agency, 24 West 45 St., New York, N. Y., at 50 cents.) (In Russian.) A handbook for the identification and study of birds found in Russian territory from the Arctic Circle northward. An introduction gives a brief account of different areas and biotopes, followed by the main work in which the species are listed in systematic order under a Russian name followed by the scientific name in parentheses. Treatment is by species with

no indication of subspecies. Each account includes a description of the bird with measurements, nesting (with egg measurements), call notes, some statement of habits, and an outline of range. Numerous black-and-white figures throughout, and two color plates of Scolopacidae, aid in identification. A chapter at the end gives a brief guide for field observations, and instruction for the preparation of study skins.—A. WETMORE.

Les Passereaux. III: Des Pouillots aux Moineaux.—Paul Géroudet. 1957. 287 pp., 48 pls., 32 in color, 38 drawings. Delachaux and Niestlé S. A., 4 Rue de l'Hôpital, Neuchâtel, Switzerland. 15 Swiss francs. This is the sixth and completing part of "La Vie des Oiseaux," the French handbook of birds, covering the avifauna of France, Switzerland and Belgium. This volume treats the *Phylloscopus* warblers to the sparrows. After stating the French and technical names (with English, German, and Italian names also indicated), there is a brief description of each species, followed by a general account of status, nesting, voice, migration, and behavior. In smaller type distribution of subspecies occurring within the area is given, occasionally with some taxonomic comment, and also references to recent important periodical literature. Compared with the "Handbook of British Birds," there is less distributional and morphological data, and the accounts are more discursive and popular in style. The information on behavior is, however, often fuller, with more modern data (literature up to 1957 is cited), although the lack of topical subheadings makes quick reference less easy. At the end of the volume, there is a section with additions to the data contained in the preceding five volumes. This is an authoritative work, which will be consulted frequently by those interested in the behavior of European birds. The drawings and colored plates by various artists often have a great deal of character; they are very different from the usual ornithological illustrations.—E. EISENMANN.

Nasi Pevci [Our Songbirds] Part 1.—Josef Jirsík. 1955. Science Ser., Biology Section, Československá Akademie Ved, Prague. 375 pp., 4 color plates, 50 figs., paper cover. (In Czech.) A full handbook for the local Corvidae, Sturnidae, Oriolidae, Fringillidae, Ploceidae, Alaudidae and Motacillidae. A six-page introduction gives briefly characters of the order, and other general data, taken in part from Stresemann's Aves. A diagnosis for family and genus is followed by an account of each species with common name and scientific name, to subspecies where required. A heading in smaller type cites local names in Czech, and gives a common name in Russian, Polish, English, French, German and Italian. This is followed by statements on range, description (including measurements), something on related subspecies and their distribution where pertinent, call notes, local occurrence, migration, food, and life history, including description of nest and eggs. Two maps illustrate returns for rooks and siskins ringed at several localities in Slovakia and Hungary, and another shows the distribution of the races of the Reed Bunting *Emberiza schoeniclus*. Figures illustrate characters of various forms.—A. WETMORE.

Nomina Avium Europaeorum. Harriet I. Jørgensen. 1958. i-xi + 283 pp. (Ejnar Munksgaard, Copenhagen, Denmark). Price, Danish kr. 27. This is a greatly enlarged and improved revision of "Glossarium Avium Europaeorum" (1941). It lists the scientific names of all European bird species, with their names in nineteen modern European languages, plus "North American" (if the species is in the A.O.U. Check-list). In addition, there are indexes in each language, which

include well-known vernacular synonyms for the names preferred in the text. A valuable novelty is the diagram of the topography of a bird showing the terms used for sixty characters in twenty-one languages (including North American). Finally there is a select bibliography, chiefly of recent European check-lists, field-guides, and regional handbooks. A very useful little book and a real contribution to international understanding.—E. EISENMANN.

Songs of Warblers of Eastern North America.—Recordings by Donald Borror and William Gunn, narration by Thom Benson. 33 $\frac{1}{2}$ RPM vinylite record. Federation of Ontario Naturalists, 187 Highbourne Rd., Toronto. Price \$5.95. This constitutes volume 4 of the Federation's "Sounds of Nature" Series. More than 400 songs are presented, representing all the species of warblers of eastern North America, with the exception of the elusive Bachman's Warbler. The arrangement of species on the record is according to similarities of phraseology and tempo, rather than to check-list order.

The technical difficulties associated with the recording and reproduction of bird voices are paramount where warblers are concerned. The recorders and publishers of this record are to be congratulated for handling their problems so well. A maximum portion of the disc playing time is devoted to the actual song recordings. Explanatory remarks have been wisely relegated to the record jacket. A commendable feature of scientific importance provided on the jacket is the inclusion of localities (state or province) and months of the recordings.—W. E. LANYON.

Lista de las Aves de Venezuela con su Distribución. Tomo II. Parte 2. No Passeriformes.—William H. Phelps and William H. Phelps, Jr. 1958. Bol. Soc. Venez. Ciencias Nat., 19 (90): 1-317, map. This scholarly volume, covering the non-passeriform birds, completes the Venezuelan check-list, the first volume (Parte 2. Passeriformes) of which appeared in 1950 (reviewed, Auk, 68: 121-122, 1951). For each recognized form we are given original citation, distribution in Venezuela, a brief statement of habitat, and an indication of extra-limital range. A Spanish name (usually invented) is provided for each species. The amazing variety of the Venezuelan avifauna is compared tabularly with the even more opulent bird-life of Colombia and Brazil. But Venezuela is rich enough: 81 families, 612 genera, 1,282 species, 1,965 subspecies. (From a vastly greater area, with numerous bird students, the 1957 A.O.U. Check-list of North American Birds reports only 796 species, of which almost a hundred are either rare strays from abroad or introduced.) Seventeen non-passerine species are listed as known only from Venezuela. Several were discovered through the explorations of the authors, and that is true of a large number of additional subspecies. The main check-list is introduced by useful supplemental lists of migrants, of forms whose type locality is restricted in this work, of names synonymized, and of birds likely to occur but not yet recorded. An indication of the completeness of the Phelps collection is a list of only 35 non-passerines reported from Venezuela of which they possess no Venezuelan specimen. A map showing localities, a gazeteer, a bibliography, and an index conclude this fine work.

May we hope that the authors, with their unique knowledge of their country, will hereafter provide an account of the zoogeography, which will help to explain, or at least throw light on, the distribution and speciation of Venezuelan birds.—E. EISENMANN.