

ORNITHOLOGICAL LITERATURE

DISTRIBUTION AND ORIGIN OF THE BIRDS OF MEXICO. By Ludlow Griscom. Bulletin of the Museum of Comparative Zoology, Cambridge, Mass., Vol. 103, No. 7, June, 1950: 339-382.

This study by one of the co-authors of "Distributional Check-List of the Birds of México" classifies virtually the whole vast Mexican avifauna, species by species, into seven major groups and 15 sub-groups, each representing a different distributional pattern. Since present-day ranges furnish the chief clues to the area of origin of a given bird, each of these categories further reflects something of the possible recent evolutionary history of the species and genera comprising it. Listed in the order of their importance with the number of species pertaining to each, the seven main groups, corresponding to the seven basic elements in the Mexican avifauna, are: Old North American—432; widely ranging (origins various)—155; South American—147; circumpolar—108; preglacial relict—68; pelagic (origins unknown)—37; West Indian—12. With the further inclusion of stragglers, the estimated grand total reaches about 2200 recognized forms and about 1000 full species, 733 of the latter being resident. These are the first figures of the kind for México to have the backing of a special study, and they probably forecast the approximate number of entries to be included in the completed Check-List. No fewer than 292 species and 69 genera are deemed to be endemic to the Mexican fauna, that is, to political México plus adjoining parts of Central America and of the southwestern United States. But, since the Ruby-throated Hummingbird is included in this category, with full cognizance of the fact that it breeds nowhere in the area outlined, it is apparent that the interpretation of endemism employed is an unusually broad one.

As might be anticipated in an undertaking of this immense scope, dealing with a region that is the scene of much continuing field work, not all of the individual species listings reflect the known facts of distribution with literal accuracy. Particularly evident in this regard are a number of species implied to be absolutely dependent on humid rain forest, though actually they range far beyond that habitat and some of them—as, indeed, has been stated in the Mexican Check-List itself—have developed races that are restricted to arid districts. While such instances are individually misleading, it is unlikely that they have any serious effect on the general conclusions.

The 15 lists, together with the accompanying tables of summary, make up about one-half of the paper. They alternate with passages of commentary designed to explain the evolutionary significance of the various distributional patterns and to stress other pertinent points. The primary emphasis is upon the *loci* of origin of Mexican genera and species. A minimum of direct comparison is afforded, therefore, with Mayr's "History of the North American Bird Fauna" (1946. *Wilson Bulletin*, 58: 3-41), which dealt chiefly with families. Griscom expresses a large measure of agreement with Mayr, though he prefers not to go quite so far in his generalizations. He is tempered in his speculations and wary of the difficulties imposed upon the student of avian origins by the inadequate fossil record, by the extreme mobility of birds, by their adaptability, and by their varying rates of evolution. Because of this and because he has previously expressed his viewpoint in regard to the development of the Central American avifauna, his broader conclusions, though too numerous to summarize here in more than a general way, are, for the most part, lacking in pronounced novelty.

México is pictured as a geologically ancient land, long possessed of a high, mountainous terrain suited to the development of new forms and well supplied off both coasts with islands attractive to sea birds. Always a southern extension of the North American continent, it was never in direct contact with the West Indies, which were to contribute but little to its avifauna. Its first land birds came from the north, and many of them passed on to South America, there to undergo tremendous further evolution into new species, genera, and even families. Later, some of the more aggressive of these newly-developed South American birds spread

back into the Mexican tropics, and the process of interchange was not completely halted even by the various water gaps that separated the two continents during part of the Tertiary. The refrigeration of climate that began in late Pliocene time drove group after group of Old Northern species southward to tropical America. The original South American element in México was almost wholly destroyed, but here and there an occasional species has survived as part of the present list of preglacial relicts. Mountain-dwelling species of the subtropical zone, once isolated by the discontinuity of the higher elevations, descended to the now cool continuity of the lowlands. With the restoration of warm conditions after the Ice Age, these birds re-ascended into the mountains over a wide range, thus accounting for their present interrupted distribution. On the eastern side of the continent there developed a solid belt of rain forest, extending from central México to South America and providing a highway along which the South American element of Griscom's summary now pushed its way northward. Because of the continuity of this habitat, these birds have developed no new species in México. In the arid Pacific lowlands, on the other hand, rain shadows have produced a sharply contrasting alternation of scrub forest and gallery forest. The resulting ecological islands are so inaccessible to colonization that only one species, a parakeet, has succeeded in establishing a continuous range up the Pacific Coast from Amazonia to Chiapas. But the same factors have worked toward the development of distinctive species of limited range, so that the Pacific lowlands have contributed no fewer than 19 endemics to the great avifauna that makes México such a fascinating field of study for the ornithologist of today.—Robert J. Newman.

BIOLOGICAL INVESTIGATIONS IN MEXICO. By Edward Alphonso Goldman. Smithsonian Miscellaneous Collections, Volume 115, July 13, 1951: xiii + 476 pp., 71 plates, and inserted map. \$4.50.

Every person in any way concerned with Mexican ornithology will welcome this work because of its descriptions and photographs of places if for no other reason. The descriptions are arranged alphabetically for each state, and the states, too, are in alphabetical order. The descriptions are, one must remember, of places as they were, not necessarily as they are. The geographical facts about Las Vigas, Veracruz, for example, are certainly correct, though one would never gather from what is said that the slopes about the town, for miles around, are now devoid of trees. The description of Victoria, Tamaulipas, does not even hint at the sisal industry which has so extensively cleared away the thickets, and one would never gather from the comments about Matamoros, Tamaulipas, that tomato fields have so widely replaced the chaparral there. The marshes about Lerma, in the state of México, must have been wonderful in November, 1892, and early July, 1904, when Goldman visited them, but when I first saw them in April, 1939, they were so cluttered up with boats, and what appeared to be dredging machinery that they were a sorry disappointment indeed. The description of the Volcán de Popocatepetl seems to fit today's conditions as well as yesterday's. The visitor to that wonderful mountain is sure to be impressed with the fact that the trees just below the *sacatón* grass area, which extends between snow-line and tree-line, are pines, not firs.

The team of E. W. Nelson and E. A. Goldman worked hard in México. The red lines on the map showing their journeyings from January 25, 1892, to February 20, 1906, appear at first glance to be the political boundaries of the states. They show up more plainly than the dotted black lines (the actual boundaries) and they cover the republic like a net designed to let no part escape. The highly interesting Del Carmen mountain area of northern Coahuila the team did not visit. They did very little work in Sonora. But compare their itinerary with that of many of us who have been working there recently! Most of us are stay-at-homes.

So valuable are the descriptions of places (even though allowance must be made for changes) that one wishes the whole work had been kept more purely historical than it is. The ranges given for the birds listed for the several zones and subzones are not by any means in agreement

with present knowledge, though the names have been brought up to date. Note, for example, that the northern limit for *Ictinia plumbea* and *Spizaetus ornatus* (p. 322) is given as southern Veracruz. Ornithologists have known, for years now, that these two species breed northward to southern Tamaulipas. *Falco albicularis* (p. 322), stated to range northward to southern Tamaulipas and Nayarit, breeds northward at least to Victoria, Tamaulipas; Linares, Nuevo León; and Guirocoba, Sonora. I have seen *Herpetotheres cachinnans* myself in San Luis Potosí and southern Tamaulipas, and van Rossem has listed it as a breeding bird of Sonora, yet in this work (p. 322) southern Veracruz is given as its northern limit. Most of the range summaries are at least largely correct, but cursory inspection indicates that about half of them are not by any means up to date. Had these summaries been corrected along with the birds' names this work would be indispensable to present day workers. As it stands it is likely to be badly misleading because it is neither patently historical nor actually definitive. This adverse criticism must not be construed as a belittling of the work of Nelson and Goldman. Their work was nothing short of splendid. But where money is poured into publishing a great work of this sort and an attempt is made to bring the whole opus up to date *in some ways*, enough time and money should be put into it to make it a dependable reference work.

As for the several lists of birds believed to be representative of certain zones and subzones, opinion will differ according to the reader's own field experience. *Momotus momota coeruliceps*, listed on p. 115 as a bird of the Humid Upper Tropical Subzone, is stated to be also a bird of the Arid Upper Tropical Subzone. Why not also of the Humid Lower Tropical Subzone? It breeds, and commonly, in southern Tamaulipas in areas inhabited by *Cairina moschata*, *Cochlearius cochlearius*, *Ictinia plumbea*, and many other species listed as birds of this very subzone. This criticism, which might be levelled against the inclusion of many species in certain of the lists, must not be taken as haggling. What I am saying is that, the lists being what they are—namely, a summary of the knowledge of some years ago—they must not be regarded as authoritative for the present.

Proof reading, unfortunately, was careless, and this fault is the more deplorable because a work of this sort is certain to be regarded as authoritative. The name of the Mexican Crow is *Corvus imparatus*, not *imperatus*. The name of the beautiful mountain is Ixtacihuatl or Ixtaccihuatl. Pronounced as (incorrectly) spelled in the legends for Plates 68 and 69, it would be strange and unmelodious.—George Miksch Sutton.

SPECIES FORMATION IN THE RED-EYED TOWHEES OF MEXICO. By Charles G. Sibley. University of California Publications in Zoology, Vol. 50, University of California Press, Berkeley and Los Angeles, 1950: 6¼ × 10¼ in., pp. 109–194, plates 11–16, 18 figs. in text. \$1.50.

This study of geographic variation in Mexican towhees adds another to the rapidly mounting list of thorough investigations of species formation. Sibley has seen that the problems arising in such studies cannot be adequately investigated in the museum alone, and he has integrated field observation very nicely with his statistical analysis of variation in color and mensural characters of skins. He has also recognized the fact that the characters of the present populations have resulted from the interaction of earlier genotypes with the changing environments.

Presentation of data follows a set pattern for each of the fifteen forms (two species, the first with ten subspecies, the second with five subspecies) considered and for the most part this pattern is a usable one. Mean measurements with their standard errors, standard deviations, and coefficients of variation are given for all but one of the races treated. It does seem unfortunate that the column set aside for the tabulation of "coefficient of variation," which is not used in the critical discussion, could not have been used to show the limits of the mean plus or minus one standard deviation. The necessity of continued turning of pages back and forth while mentally adding and subtracting is a common failing of practically all papers of this type. The reader desiring the information about variability is provided with the data, in

the form of the means and their standard deviations, whereby this statistic can easily be calculated. It would have been helpful if the author had presented more information on statistical methods of analysis utilized. Some of the samples were very small (3-6) and perhaps worthy of special treatment. The terms *significant* and *significantly* are loosely used in a number of places. Thus, on p. 135, in discussing the Mount Orizaba Red-eyed Towhee population, Sibley says: "... although in some measurements . . . and in color tones they are significantly different from topotypical *P. e. maculatus*," he does not, so far as this reviewer can determine, present data showing that the color differences referred to *are* significant. Again, on p. 173, we encounter twice the phrase "significant barrier" without being told what a significant barrier is. Loose use of important words of this sort may leave a reader in doubt and confusion.

It would be helpful to know what criterion of separability was utilized in arriving at opinions regarding the validity of the subspecies recognized. Much has been written in recent times regarding this question and it is unfortunate that the author has not given direct information concerning the degree of separability which obtains amongst the various races considered.

For the reader not thoroughly familiar with place names and localities the Hubbs-Perlmutter diagrams are difficult to use. The author apparently feels that all of the subspecies recognized are identifiable on the basis of color, and utilizes these charts of mensural characters simply to show trends and interactions among the populations treated. It would be of interest to know the number of specimens involved in the preparation of these data.

The defects pointed out are all minor ones and do not at all detract from the soundness of analysis. Sibley's comments on the interspecific contacts between *P. ocai brunnescens* and *P. erythrophthalmus oaxacae* and the resultant hybridization and intergradation are especially interesting. It is particularly pleasurable to note his recommendation that *Pipilo maculatus* and *P. macronyx* be considered conspecific with *P. erythrophthalmus*. This action has long been indicated.

The plates showing typical habitats are of interest to readers familiar with *P. erythrophthalmus* in the eastern United States. With the exception of altitude, the subspecies found in eastern Canada and the eastern United States apparently show much the same habitat preferences as do the Mexican races.

This publication should be of great value to all serious students of zoogeography.—J. C. Dickinson, Jr.

GRÖNLANDS FUGLE. THE BIRDS OF GREENLAND. Part 2. By Finn Salomonsen. Ejnar Munkegaard, Copenhagen, 1951: 9 × 13 in., pp. 159-348, 19 color-plates and numerous decorative sketches by Gitz-Johansen. Paper. Appearing in three parts, each at \$9.00, but parts cannot be supplied separately.

For at least three reasons is this sumptuous work also great. First, it focuses sharply on Greenland, yet the reader is never permitted to forget that that island is only a part of the vast arctic whole. Second, it has balance: the taxonomic discussions are cogent and informative, but not over-long; the parts dealing with life history are readable without being discursive; the distributional material, though detailed, does not dominate. Third, and best of all, the work keeps beautifully in key: color-plates, black and white sketches, native names of birds, place-names, even the idiom—all reflect and call to mind Greenland. Part 2, like Part 1, is full of data based on recovery of ringed birds (the Danish government has sponsored this work for a long time); on specimens, most of them now in Copenhagen, collected on numerous expeditions; and on long hours of personal observation and work in the field.

Part 2 deals with the Rock Ptarmigan (*Lagopus mutus*) and with six charadriids, nine scolopacids, two phalaropes, three skuas, nine gulls, and one tern. Six of these 31 forms are only briefly discussed. Among the 25 fully written up are three not known to breed in Green-

land—the European Golden Plover (*Pluvialis apricaria*), American Golden Plover (*P. dominica*), and Whimbrel (*Numenius phaeopus*). There are many records for all three of these species and the author's explanation of their occurrence is well presented. Some readers will be surprised to note that the well known Semipalmated Sandpiper (*Ereunetes pusillus*) and Least Sandpiper (*Erolia minutilla*) are nowhere mentioned. Another species 'conspicuous by its absence' is the Great Skua (*Catharacta skua*), a bird of very limited breeding distribution in the north.

Part 2 makes at least two contributions to popular knowledge. One of these has to do with the world's northernmost bird. Pleske, in his "Birds of the Eurasian Tundra," stated (p. 346) that 85° 5' north latitude, at which degree the *Fram* had encountered the Fulmar (*Fulmarus glacialis*), was the "most northerly point attained by any bird." Alexander, in his "Birds of the Ocean," called the Ivory Gull (*Pagophila eburnea*) "the most northerly of all birds" (p. 136). Salomonsen, in "The Birds of Greenland," says of the Ivory Gull: "It lives nearest to the Pole of all birds and has been observed northwards almost to 85° n. lat." (p. 286). The Rock Ptarmigan collected by Feilden in 1876 in Grant Land was, Salomonsen assures us, the northernmost ptarmigan ever collected by man, but the northernmost *bird* ever collected was a Turnstone (*Arenaria interpres*). The latter specimen, now in Copenhagen, was taken at Low Point, on the north coast of Peary Land, at 83° 7' n. lat. (p. 205).

Another matter of general interest is the crossing of the notorious ice-cap by birds. Salomonsen states (p. 284) that the Long-tailed Skua (*Stercorarius longicaudus*) is "the only bird which makes long excursions over the ice-cap, covering hundreds of km and sometimes approaching the center of Greenland." By the sheerest of coincidence, I recently received from William H. Allen, a friend since the days when we were army officers together, a photograph of this



A Long-tailed Skua or Jaeger (*Stercorarius longicaudus*) about one hundred miles in from the edge of the Greenland ice-cap. Note the vague barring on the under wing coverts—evidence of immaturity. The picture was sent to the editor by his friend William H. Allen, of the staff of Air University Library, Maxwell Air Force Base, Alabama.

beautiful species taken about a hundred miles in from the edge of the ice-cap. The exact spot at which the bird was encountered cannot, for reasons of security, be stated, but the picture is intensely interesting none the less, especially in the light of Salomonsen's statement.

Certain of Salomonsen's distributional data are thought-provoking to say the least. There are puzzling gaps in the breeding range of the Arctic Tern (*Sterna paradisaea*). The American Golden Plover (31 records, all based on skins) has been reported only from the west coast, principally in the Disko Bay area. The Long-tailed Skua, which breeds commonly in the north, is "very rarely observed in southern Greenland," for its migrations are largely pelagic (p. 283). The Iceland Gull (*Larus glaucooides*) is, aside from the Kittiwake (*Rissa tridactyla*), the commonest gull of West Greenland, but in its breeding "it is restricted to the fjord-country in the interior" (p. 313). These are but samples. Data presented clearly show that amelioration of climate has led to remarkable range-change; that competition for food and nest-sites has brought about otherwise inexplicable situations; that some arch-competitors, notably the Great Blackback (*Larus marinus*) and Glaucous Gull (*L. hyperboreus*), manage to 'stand each other' remarkably well where their ranges overlap.

The color-plates, despite their shocking crudity, are strikingly *in character*. As reproductions of brisk water-colors they are fairly breath-taking. Speaking as a fellow bird artist, however, I wish that Gitz-Johansen would refrain from outlining a white breast in black. I wish he would study more closely (not, I hasten to make clear, draw in greater detail, but *study*) the perspective of spread wings. I wish he would never forget what happens to a flying bird when its wings fail to keep it in one place (as when hovering) or to hold it up and push it forward (as in ordinary flight). One of the most beautiful spots in the book is the back of the Iceland Gull (plate 32). Here the effect of softness and cleanness is incredibly authentic and beautiful.—George Miksch Sutton.

THE BIRDS OF NEWFOUNDLAND. By Harold S. Peters and Thomas D. Burleigh. Department of Natural Resources, Province of Newfoundland, St. John's, 1951: 6½ × 9 in., xix + 431 pp., 32 color-plates, 40 text figures and pictorial map end-papers by Roger Tory Peterson. \$6.00.

Rugged Newfoundland has long been one of the most backward political entities on this continent in wildlife conservation matters. Not until 1949 when it became Canada's newest province did it become a party to the International Migratory Bird Treaty of 1916. As Britain's oldest colony it maintained its aloof individuality and made its own game laws, lax compared to those of its neighbors. Its fisherman population has always utilized its once abundant bird-life as a source of food, a welcome change from an otherwise monotonous diet of "fish and brewis." There loons, alcids, and gulls are hunted and eaten as avidly as geese and ptarmigans; eggng the sea-bird colonies has always been established practice. Enforcement of the mildest game laws is difficult, and not pressed actively by the politically wise.

It is praiseworthy indeed, and a great step forward for the Newfoundland government to sponsor and finance a book "to aid the people of Newfoundland in identifying the birds of that Island and to provide information concerning these birds," as the authors say in their preface. With this in mind Messrs. Peters and Burleigh have provided a fairly adequate volume for the needs of the people of the area. Their brief descriptions and field marks, when used in combination with the 32 competent colored plates by Roger Tory Peterson, are sufficient to enable any reader to identify the local birds. Short accounts of voice, nest and eggs, range, and habits, largely abridged from standard reference works, supply the essential information available for each form recognized.

Between 1937 and 1947 the authors covered their territory thoroughly, spending a total of 304 days in field work which should have made them more familiar with the flavor and color of this distinctive island than is apparent from their text. They have reviewed the literature

and examined much of the specimen material available in North American museums. It is also gratifying to note their extensive use of banding data, a source of information still too little used. They have followed the as yet unpublished dictates of the AOU committee for their scientific and accepted English names, a preview which reveals many of the latter to be rather unwieldy mouthfuls for lay use.

The analysis of data on occurrence is becoming a difficult and delicate matter in this day of increasing use of sight records. The serious student may question the authors' evaluation of their evidence of the local status of each species and subspecies. More than 25% of the forms recognized are considered "casual" or "accidental" which, though the categories are not defined, seems abnormally high for an area so little worked ornithologically. They seem to have been neither sufficiently critical of their material nor consistent in their treatment of it. Why, for instance, do they accept, apparently on the basis of sight records alone, the Ruby-throated Hummingbird and Nighthawk which are at best rare, irregular visitants of uncertain status, and reject for lack of specimen evidence Barrow's Golden-eye which is certainly of regular occurrence, and for which they present equally valid sight records? They wisely relegate to the hypothetical list 55 other species for which no specimen evidence exists, but accept such rarities as the Yellow-nosed Albatross and Sandhill Crane, among others, on the basis of old mounted specimens formerly in the St. John's Museum, since destroyed by fire, which were completely without data, and which may well have arrived there as curios brought home by Newfoundland's far-travelling seafarers.

The volume is handsomely produced and well printed. Peterson's 40 black and white text figures and his picto-map end-papers are very fine. It is a pity the manuscript was not competently edited to correct grammatical errors and awkward use of English because it is the only work available on the birds of this unique island and will doubtless have a wide distribution both at home and abroad. It is to be hoped it will stimulate and encourage the Newfoundlanders to appreciate and conserve their avifauna, and perhaps to study it and give a more accurate and comprehensive knowledge of it to the world.—O. L. Austin, Jr.

THE HAWAIIAN HONEYCREEPERS (AVES, DREPANIIDAE). By Dean Amadon. Bulletin of the American Museum of Natural History, Volume 95, article 4, December 11, 1950: pp. 151-262, figs. 1-23, pls. 9-15, tables 1-15. \$1.75.

Perhaps nowhere else in the world was there such remarkable opportunity for a thorough comparative study of the mechanisms of adaptive radiation as that offered by the Hawaiian honeycreepers. On these volcanic islands all conditions were ideal: varying degrees of isolation, diversity of available niches, repeated cataclysmic changes, relative freedom from natural enemies, and plastic immigrant stock upon which evolution could work. The divergence of the drepaniids has been correspondingly extreme. The great pity is that the broader concepts of biological thinking had not developed to the point where such a study could have been undertaken fifty or seventy-five years ago. Like the author, I spent a considerable part of my army service in Hawaii; I was able to get a very little field experience with the Drepaniidae, or with the pitiful remnants thereof. I know their unique fascination. But I also can appreciate firsthand the near-hopelessness of trying to reconstruct conditions in the primeval forests, which were already on the wane in the days of Perkins and Henshaw (around the turn of the century); or of making comparative studies when a large percentage of the forms are extinct, or so nearly so that work on them is impracticable, and existing material is grossly inadequate.

We are not told precisely what material was used in all parts of the study, or how many specimens were handled in all. But it is clear that much time was spent in the Bishop Museum in Honolulu, and that the large series in the American Museum of Natural History (especially in the Rothschild collection), formed the "principal basis." Apparently far more specimens were examined, particularly of *Vestiaria*, in the study of plumages than in other connections.

In the systematic list, which includes diagnoses and distributions, the 22 species and total of 39 forms are grouped into two subfamilies and only nine genera: a far less cumbersome arrangement than those heretofore employed (e.g., in Munro's "Birds of Hawaii." 1944. pp. 89 ff., where 17 genera are used, following Perkins). No particular evidence is presented as a basis for the consolidation; but it seems justified in view of the "great morphological diversity existing among closely related species in this family," and certainly makes for easier understanding of the groups.

The analysis of measurements is given considerable space, although many conclusions here are either very general or negative. There is interesting discussion of racial and specific variations, limiting of variability by small population-size (not demonstrated), possible effects of allometric growth in some forms, and probable adaptive significance of characters. The ratio diagrams (based on a method of Simpson's and explained in an appendix) show quite strikingly the changes in body proportions; I wish it had been possible to extend their use to include both higher and lower categories in more detail.

The anatomical section, while very instructive, nevertheless suffers most of all from the woeful lack of comparative material. Repeatedly we are led into some new aspect or other, only to find that data are insufficient or conflicting, and that we can after all conclude little or nothing. The emphasis here is upon probable relationships of the family, and scarcely at all (as the author points out) upon patterns of radiation within it. While Amadon favors an origin from some generalized coerebid, he does not close the door to other possibilities. We are left with the idea that the nine-primaried passerines are such a close-knit group that, since the ancestral drepaniid was an insect- or nectar-feeding member of this basic stock, it makes little difference just what we call it. While we evidently postulate a monophyletic origin for the family, I find no definite evidence brought to bear upon this point. However, the data in the various sections of the study are made to support very strongly a divergence into the two subfamilial lines—evolution in the one case largely through extreme modification in bill, and in the other through less marked structural change coupled with change in coloration.

There are many pages of general discussion, dealing with various aspects of speciation phenomena, with examples drawn both from the Drepaniidae and from other groups. The endemicity of the Drepaniidae and of other Hawaiian birds is summarized in tables and maps. Stress is given the importance of isolation, secondary overlap, and competition between adaptive types in radiation of species and of higher categories. Several instances are pointed out and explained. This discussion, in addition to being informative, is keenly thought-provoking. It is fascinating to consider, for example, *why* the two species still most abundant are not only among the most widespread (one breaking up into subspecies and the other not), but also allegedly the most primitive of their respective subfamilies. And why should the Drepaniinae, in which all the genera but one are monotypic, and of which the two most primitive members are such frequent inter-island stragglers as to inhibit even subspeciation, yet have evolved more genera than the Psittirostrinae, with three of its four genera rather highly polytypic.

There is an occasional apparent contradiction in the text; the present status of *Drepanis* (while given elsewhere) is omitted from the species-by-species summary of this information; I noted three minor typographical errors; one might wonder why the tree *Metrosideros* has one specific name in the text and another under the figure.

The paper and print are good, and the seven plates of remarkably sharp and clear photographs of skins serve well as illustrations. The conclusions are for the most part conservative, and the data well presented. Viewed in the light of present-day conditions, the paper appears splendidly worked out; it gathers available data from many sources, and presents us with as clear a picture of the structure, plumage, habits, general ecology, and relationships of this family as is now available. Most criticisms that might be made are more a reflection of the difficulties involved than a discredit to Amadon's capable work.—William A. Lunk.

A GUIDE TO BIRD FINDING EAST OF THE MISSISSIPPI. By Olin Sewall Pettingill, Jr. Oxford University Press, New York, 1951: $4\frac{1}{2} \times 7\frac{3}{8}$ in., xxi + 659 pp., 72 pen-and-ink sketches by George Miksch Sutton. \$5.

Now for the first time we have a Baedeker for bird watchers.

Anyone who has travelled into unfamiliar territory with limited time hoping to see the distinctive birds of the area—and who hasn't?—will appreciate the usefulness of such a book. In fact, out of just such experiences of his own, usually disappointing, came Pettingill's inspiration for this guide.

The amount of information contained here is astonishing. There are descriptions of more than 500 places of ornithological interest, with detailed suggestions for reaching them, for finding lodgings, for securing permission to enter, and for solving other problems confronting the visitor. Most of these are places for seeing birds in the wild—in nesting season, during migration, or on the wintering grounds. But there are notations also on zoos, museums, libraries, research stations, bird clubs and other institutions of ornithological importance. A chapter is devoted to each of the 26 eastern states with two exceptions (two states combined), and the points of interest appear alphabetically according to the name of the nearest town shown on road maps.

A feature of special merit is the ecological description of the state at the beginning of each chapter. This feature will command the attention not only of ornithologists but also of naturalists generally. Although most of the book is intended for reference rather than for consecutive reading, many people will find themselves skipping through the chapters, reading the state descriptions with interest. There are few people indeed who will not be surprised to learn what a diversity of habitat occurs in every state, even a prairie state like Illinois.

No one person alone could have written this book, as Pettingill acknowledges. The finished product is a triumph of cooperative effort. Probably there has never before been a book in ornithology that has had so many people participating directly in the preparation (more than 300). Yet Pettingill's terse style marks the whole, including four chapters written by state authorities.

The sketches of birds have the lifelike quality of form and motion we have come to expect from the skilled hand of George Miksch Sutton.

At the end of the state chapters there is a list of books for further reference—guides to field identification and regional publications.

The alphabetical index to places and bird species appears quite complete, but I consider it a little unfortunate that some attractions are not to be found directly under their well-known names. For example, I did not discover immediately that Hawk Mountain was listed under "mountains," nor that Pymatuning was listed under "swamps" and placed in the Pennsylvania chapter. (It is also a lake lying mostly in Ohio.) Still, this is a minor point and it does not detract appreciably, if at all, from the fine work. The searcher for a specific item will applaud the practice of showing place names in capital letters throughout the book so that a familiar name may be found fairly easily by scanning the proper chapter.—Harold Mayfield.

AUDUBON WATER BIRD GUIDE. By Richard H. Pough. Doubleday & Company, Inc., Garden City, New York, 1951: $4\frac{1}{2} \times 7\frac{1}{4}$ in., xxviii + 352 pp., 48 colored plates and 138 black and white drawings. \$3.50.

This volume complements Dr. Pough's earlier *Eastern Land Birds* in the Audubon Bird Guide series. Its scope is defined by the sub-title, "Water, game, and large land birds of Eastern and Central North America from Southern Texas to Central Greenland, most of which range to the Pacific Coast." There are 485 illustrations in color on 48 plates by Don Eckelberry, and 138 in black and white by Earl L. Poole.

Those of us who grew up with the handy little Reed "Guides" in our hip pockets will recognize Pough's spiritual inheritance from these useful, but decidedly limited, volumes. Division of species and territory covered by both authors are approximately the same, but Pough's works are enriched by a wealth of material which precludes their fitting into anyone's hip pocket. Modern bird students will, however, gladly sacrifice the convenience of Reed's books for the excellent text and fine illustrations in the present volumes.

The *Audubon Water Bird Guide* treats each species under the sub-heads *identification, habits, voice, nest, and range*. Measurements include overall length, length of wing, and, for some species, length of bill. A valuable feature is the average weight given for most species. For ready comparison there are numerous tables showing average length and wingspread of related species, or of birds likely to be observed in the same habitat. Vernacular names follow newer concepts in nomenclature. Where there is disagreement between American names and those recognized by the British Ornithologists' Union, the latter are given in parentheses. Data are given on bird ages where these are known.

As might be expected from Dr. Pough's background and interests, there is much emphasis on sound ecology and militant conservation in the treatment of each species. Birds are related to their habitats through a discussion of food and cover requirements. Attention is called to the fertilizing effect of large bird colonies, and the influence of this factor on fish, shellfish, and other aquatic populations. Possibilities of extending the ranges of species with limited distributions are explored.

From the inclusion of detailed information on ranges, the reader will derive an impression of the holarctic character of our waterfowl and of many of our larger land birds. The front end-piece is a map of the North Atlantic, with named quadrats and information on water temperatures and major flight-routes. Inside the back cover is a map of North America showing major biotic regions. Extralimital species which occur in eastern North America as casuals or strays are rather fully treated.

Eckelberry's colored illustrations are arranged on plates bound in the center of the volume. They show major plumage phases, and are generally excellently drawn and well reproduced. Plate No. 48 includes the pigeons and doves, and encounters the difficulty of reproducing exactly the delicate iridescent shades in the plumages of these birds. Poole's black and white drawings accompany the text.

The author's foreword contains pertinent suggestions for the best use of the volume. A well arranged Table of Contents shows families and genera, and makes reference to text and illustrations easy. Information is concise and well presented. Because of the ecology and conservation which is included, this volume is much more than a "bird guide".—Maurice Brooks.

ONTARIO BIRDS. By L. L. Snyder. Clarke, Irwin & Company, Ltd., Toronto, 1951: 6 × 9½ in., x + 248 pp., with 146 line drawings by T. M. Shortt. \$4.50.

We have in this attractive volume a source of general information on the common birds of Ontario, authored by one of Canada's leading ornithologists who, since 1935, has served as Curator of Ornithology at the Royal Ontario Museum of Zoology in Toronto. As stated in the Preface, the book is in no sense a complete reference work nor a guide to field identification; rather is it "intended as a source book for teachers, pupils, amateur naturalists, and all out-of-doors people, for use indoors."

The first four chapters are of an introductory nature, pointing out, respectively, the characteristics of the bird as an animal; certain peculiarities of bird distribution; a few outstanding facts obtained from observations of bird migration; and the accepted method of classifying birds, together with a list of the 351 Ontario species grouped according to orders and families. The fifth and last chapter, entitled "Natural History," comprises the bulk of the book (pp. 33-235) and contains its principal substance. A Spring Calendar giving the first-arrival dates

of 50 common migrant birds; an adequate index; and endpaper maps showing all the Ontario places mentioned in the text, complete the volume.

Under "Natural History" the common Ontario bird species are taken up by families in phylogenetic order. There are subheadings for families, but not for species. After each family subheading the text usually consists of, first, a description of the more obvious family characteristics and, second, a discussion of each of the common species with respect to its geographical and seasonal distribution in the province, habitat, song (if any), nesting habits, feeding habits, and general winter range. Aside from the parenthetical use of the scientific names of families and species, and of an occasional term denoting an anatomical feature, all technical terminology is avoided. The information presented is consistently pertinent, clearly demonstrating that the author, with his years of experience in a public institution, understands what people, when inquiring about birds, want to know. The style of writing is simple and direct, without flowery expressions, dramatized anecdotes, whimsical comments, anthropomorphisms, or other devices often considered necessary to satisfying public interest. For a presentation that reads easily and informs well, it is, in the opinion of this reviewer, one of the finest examples extant.

Scattered through the volume are 146 line drawings by T. M. Shortt, Chief of the Division of Art and Exhibits at the Royal Ontario Museum of Zoology. Forty-nine are of the bird skeleton and external structural characters distinguishing bird families; the remainder are of live birds in various attitudes. All are beautifully done and contribute immeasurably to the attractiveness of the work. Some of the drawings of live birds are especially refreshing.

Only one unfavorable criticism of "Ontario Birds" seems justified, namely, its failure to include any reference whatever to other sources of information. Arousing, as it inevitably will, an interest in birds, the book should present somewhere a list of guides to identification, sound recordings, treatises on methods of attracting and studying birds, and some of the more readable works on such important ornithological matters as migration, distribution, and life history. Readers would then be encouraged to widen their interest.—Olin Sewall Pettingill, Jr.

BIRDS' NESTS OF THE WEST. A FIELD GUIDE. By Richard Headstrom. Ives Washburn, Inc., New York, 1951: $4\frac{1}{2} \times 7\frac{1}{4}$ in., 177 pp., with 29 photographs. \$3.00.

Bird-watchers living in the western part of the United States will be pleased to learn of Mr. Headstrom's latest book. This volume contains keys for nest identification of birds breeding in the United States west of the one hundredth meridian. The keys are arranged according to the general habitat and location of the nest-sites. The 29 generally excellent photographs of nests taken by Harry L. and Ruth Crockett add considerably to the value of the book. More thought might have been given to the selection of species to be illustrated, however. For example, 4 of the 29 photographs are devoted to the dove family, while the warblers are not represented at all. The eggs of few species have been illustrated as many times as those of the Killdeer. Their inclusion here was hardly necessary.

In his "Birds' Nests" of the eastern United States (1949: 24), Mr. Headstrom stated: "This guide is an attempt to help those who enjoy nest-hunting to identify nests with some measure of success, especially during the winter months in the North, when many nests are easy to see. And since bird life and plant life are then at their lowest ebb for observation, another objective will add interest to our winter trips." Mr. Headstrom has done an admirable job in fulfilling the purpose for which his two field guides were written. Scout leaders, teachers, and nature-counselors should find these guides indispensable in their work with children.

In the introduction (p. 18) of the present volume, Mr. Headstrom says: "It must be admitted that the best way of identifying a nest is when it is still occupied by the maker." The books were not written for, nor will they be of much value to, the professional ornithologist or serious amateur bird student.—Andrew J. Berger.