

## REVIEWS

EDITED BY JOHN P. HUBBARD

**Dynamic zoogeography.**—Miklos D. F. Udvardy. 1969. New York, Van Nostrand Reinhold. xvii + 445 pp., 5 col. pls., 174 figs., 14 tables. \$17.50.—On the dust jacket is the statement that Udvardy wrote this book “to meet the need for a comprehensive reference on zoogeography.” How successful has he been? The book is certainly chock-full of facts, definitions, maps, tables, diagrams, theories, interpretations, and opinions. It commendably includes many details not immediately brought to mind by the word zoogeography, yet nonetheless pertinent, such as the discussion of environmental stimuli for habitat selection. No reader can fail to broaden his horizons, especially with Udvardy’s use of illustrative examples taken from a broad spectrum of vertebrate and invertebrate animals, excerpted from publications in many languages.

The book covers so much that a reviewer must be selective in choosing material for comment. I will thus concentrate on areas that are of particular interest to me and, I hope, to Auk readers. Ornithologists will find themselves uncomfortable with some of the illustrative examples chosen by Udvardy from among birds. For example, Table 10 (“North American vertebrates exemplifying some distribution area types”) includes at least three birds that do not fit the categories in which the author has placed them: it is unrealistic to characterize the Purple Finch as being of restricted vagility and stenotopic, with the Boreal Owl considered highly vagile and of a widespread habitat. Further, to call the Song Sparrow eurytopic as a species is to ignore the fact that throughout a large part of its range in western United States and Mexico it is severely limited to a particular and very restricted habitat. Another poor choice is the Red-breasted Nuthatch as an example of a disjunctly distributed Holarctic species; in fact, Udvardy himself cites Löhrl’s 1960-61 papers that show the Old World forms are *not* conspecific with *Sitta canadensis* (map caption, p. 179).

In his introduction (p. 4) Udvardy states: “It is on the distribution of the species that the zoogeographer concentrates his research, even though he may occasionally study the gross spatial relationships of higher taxa. To define the areas of higher taxa is only one of many ways to group distribution areas; this approach is not strongly emphasized in this book.” This theme is expanded in a section called “The area of higher taxa” (p. 230 ff.). It is here that I find my greatest disagreement with Udvardy’s concept of zoogeography. I believe him to be far too pessimistic and deprecatory about the value of studying the zoogeography of levels above the species. His viewpoint is based in part on his belief that the species alone has reality, while “the higher taxa are artifacts, i.e., abstractions.” His manifesto is that “zoogeographical research should be based on the distribution of species” (italics his). Species are indeed real; the problem, as in higher taxa, lies in obtaining agreement as to species limits. For example, in giving the numbers of species shared by two areas (such as continents), a “lumper” will arrive at a distinctly larger figure than will a “splitter” (e.g., in the case of the supposedly Holarctic species *Sitta canadensis*). On the other hand, there are generally accepted relationships among groups of species, which can be analyzed zoogeographically whether we call them genera, tribes, subfamilies, or families. In studying the distribution of the grouse, it makes little difference whether we call them a family or a subfamily, and whether we admit 11 genera or only 6. Thus zoogeographic

studies can be done at all taxonomic levels, from the species up, with due allowance for and proper emphasis on the subjective element.

Udvardy mentions (p. 274) the impact of differences in the species concept on statistical and other comparisons in zoogeography (in spite of his earlier insistence that only the species has reality). An effort to compensate for differences in species concepts in zoogeographic studies has been made through the use of superspecies (cf. Mayr and Short 1970, Publ. Nuttall Ornithol. Club No. 9: 100), but even here, tidy-looking lists of numbers of superspecies can mask the fact that there can be legitimate subjective disagreement as to which forms should be included within a superspecies.

In Udvardy's section on higher taxa, the generalizations that he does make ("cautiously") strike me as being weak or invalid. "Generally speaking, we may say that a genus is usually spread across a continent, and that a family is usually spread over several continents." The exceptions defy listing here, and cast doubt even on the use of "usually." Further, "members of a family are genera that have diverged to fill related niches in many ecosystems." Why not the exact reverse? One can easily think of many members of families that fill *different* niches in the *same* ecosystem. In North America, one need only mention the waterfowl, shorebirds, and buntings of several genera that are adapted to particular niches within the prairie and tundra ecosystems. On the other hand, similar niches in separate ecosystems are not uncommonly filled by convergent, unrelated forms.

Udvardy deprecates the study of present distributions as a guide to evolution of higher taxa, quoting as support for his viewpoint (p. 234) a statement that "Madagascar is indisputably the [original] home of the lemurs," made in 1907 before the widespread fossil distribution of lemurs was known. This is unfair. Any competent student of zoogeography realizes that deductions based on present distributions are tentative and subject to modification based on new evidence from the fossil record.

Udvardy's book has a generous share of errors or discrepancies of the kind that should have been eliminated by careful editing, especially in view of the somewhat exorbitant price. On p. 21 at least one full line of text has been left out. On pp. 154-157 and 221, the caption key to areas hatched, stippled, etc., is not in accord with the figures themselves. In Figure 5-15 (p. 284) the caption for area B applies to area C and vice versa. In Figure 3-13 (p. 111) temperatures are given in degrees Fahrenheit, but in the text discussion (p. 112) in Centigrade.

We return now to the question posed in the first paragraph, as to Udvardy's success in meeting "the need for a comprehensive reference on zoogeography." Facts alone do not a reference make. Reading through the book, I found myself more and more dissatisfied with the *organization* of the information. The sequence of presentation did not appear to be logical, yet I was uncertain as to how to improve the arrangement. As a result, unpleasant though it may be for a conscientious reviewer, I am forced into a nonconstructive criticism. I don't know the optimal organization for a zoogeography text; I only know that this isn't it.—KENNETH C. PARKES.

**A comparative study of the egg-white proteins of passerine birds.**—Charles G. Sibley. 1970. New Haven, Connecticut, Yale Univ., Peabody Mus. Nat. Hist. Bull. 32. vi + 131 pp., 38 figs. \$5.00. **A comparative study of the egg-white proteins of non-passerine birds.**—Charles G. Sibley and Jon E. Ahlquist. 1972. New Haven, Connecticut, Yale Univ., Peabody Mus. Nat. Hist.

Bull. 39. vi + 276 pp., 37 figs. \$7.50.—While the relationships of many groups of vertebrates are relatively well-known, those among the higher categories of birds have with few exceptions remained enigmatic. One of the most interesting and potentially important new techniques for probing these relationships has been that of biochemical systematics, not only for birds but for all animal groups. For well over a decade Professor Charles G. Sibley, with the aid of many co-workers, has employed "biochemical systematics" in studies of relationships, in spite of an often skeptical ornithological public. This effort has led to a massive compilation of data, particularly on egg-white proteins, which are now summarized in these large monographs. In both monographs the history of the classification of each group is discussed and then the egg-white data are assessed with the idea of first, elucidating the evolutionary relationships of the various groups, and second, pointing to new problems uncovered by this technique. It seems appropriate to comment both on the technique that Sibley has pioneered and on the two monographs, which will be discussed together.

The conceptual basis for the use of biochemical data in studying evolutionary relationships has been considered many times. As Sibley records (1970: 9), "the argument is based upon the now established facts that genetic information is encoded in the sequence of nucleotides in the genetic material, DNA, and that this sequence is translated, during the synthesis of protein molecules, into a corresponding sequence of the 20 kinds of amino acids of which proteins are composed. Thus protein molecules are genetic messages and, by a commonly accepted definition, a gene (or cistron) is the sequence of nucleotides which codes for a single polypeptide chain. A protein molecule is composed of one or more polypeptide chains." Electrophoretic techniques record some of the more important characteristics of proteins, primarily size and charge. Thus Sibley's general approach is to use the overall resemblance of the electrophoretic profiles as indications of the degrees of relationship among the various taxa of birds. The basic methodology of biochemical systematics thus does not differ significantly from that utilized by most ornithologists, past and present, with most other forms of data.

The presentation of material under each taxonomic unit in the passerine volume is as follows. Introductory sections preceding the discussions of both the nonoscines and the Passeres include excellent reviews of the history of the classification of the various groups, with the inclusion of the characters currently used to classify the suborders, superorders, superfamilies and families. In addition under each family the history of the opinions of various workers concerning the relationships of the various families is reviewed. Sibley does not attempt to evaluate the evidence upon which the various opinions are based, but simply lists them in chronological order with an unbiased view. Then the egg-white protein data are presented and evaluated in the light of the other evidence. As Sibley puts it (1970: 22), "This paper then is primarily concerned with the search for evidence of the degrees of genetic relatedness among living passerine birds." He expresses his doubts "about the available data of all kinds to *prove* very much about the genetic relationships of the higher categories of birds." Thus at the end of the monograph the systematic conclusions are taken as "probability estimates" in the form of categories of "Highly Probable," "Probable," "Possible," and finally "Improbable."

The format of the nonpasserine differs slightly from the passerine volume. A very well-done chronological survey of the classification of birds is followed by

a section that considers six of the major characters Gadow utilized in his classification of birds. These characters, which are palatal structure, pelvic musculature, plantar tendons, intestinal convolutions, carotid arteries, and the fifth secondary, are assessed with respect to taxonomic distribution and difficulties in interpretation. Then after a short section on methods, each nonpasserine group is discussed under ordinal headings in a format that includes an introduction, which is mainly a statement of the questions of relationship, a historical review of the classification, and a section on the egg-white evidence followed by the conclusions. The monograph ends, like the passerine volume, with a section on "Probabilities and Possibilities." The systematic conclusions of both monographs are far too numerous to be enumerated here. The interested reader is referred to the monographs.

Unfortunately, because starch-gel electrophoresis is, as a technique, incapable of producing very fine resolution of the protein bands, the plates at the ends of the monographs are not altogether worthwhile. Sibley recognizes the limitations of the starch-gel egg-white protein patterns and states in the discussion and summary (1970: 109) that "the principle contribution of this study has been to identify a number of situations which can be evaluated as probable or possible." As he (1970: 111) notes, "It will be apparent...that the egg-white protein data do not support some of the alliances that have been proposed in the past. In most cases, however, they do not oppose the present classification except to suggest that larger assemblages than have been recognized may exist."

Sibley and Ahlquist conclude in the epilogue of the nonpasserine monograph by stating, "This study is not completed with the publication of this paper. Indeed, it is but barely begun. The starch-gel technique is not capable of resolving many or even most of the proteins in avian egg white and thus it has not been able to provide us with data of sufficient precision to solve most problems. We therefore regard this paper as a stage in the development of molecular systematics, not as a definitive statement."

Perhaps of greater interest than the starch-gel stage in molecular systematics will be the work that is now coming out of Sibley's laboratory using the new technique of "isoelectric focusing in acrylamide gel," or IFAG. Two papers have already appeared (Sibley and Frelin 1972, *Ibis* 114: 377-387; Sibley and Ahlquist 1973, *Auk* 90: 1-13), and judging from these the technique looks promising. This new technique will be a better "test" of biochemical systematics in avian systematics. The starch-gel stage (as summarized in these two monographs) is thus only the launching pad into this unexplored field.

Everyone interested in the relationships of nonpasserine or passerine birds must obtain copies of these important monographs. If for no other reason, they are worth their weight in gold as historical perspectives on avian systematics.—ALAN FEDUCCIA.

**Pleistocene and Recent environments of the Central Great Plains.**—Wakefield Dort, Jr., and J. Knox Jones, Jr. (Eds.). 1970. Lawrence, Kansas, Univ. Kansas Press. 433+ pp., many figures and tables. Cloth. \$25.00.—Travelers crossing the Great Plains anywhere from the Prairie Provinces to Texas and New Mexico cannot fail to be impressed by that vast expanse of open country; country that no doubt for centuries was largely a sealike grassland. Scientists have explored many of the biological problems of the plains, and in this volume they attempt to record some of what is known and suggest what is not known in the

fields of soil science and climate, anthropology, botany, and zoology. In all, 23 papers are presented, all given at a symposium held at Lawrence, Kansas, on 25 and 26 October 1968. Altogether this is a laudatory effort to elucidate one of America's truly impressive and, sadly, vanishing natural wonders, the prairie region that forms both the heartland and the breadbasket of the continent.

Although only one paper deals directly with birds, Robert M. Mengel's "The Central Plains as an isolating agent in bird speciation" (pp. 279-340), many others may be of at least passing interest to ornithologists. Among these are several dealing with the paleobotany of the region and analyses of such vertebrate groups as fishes and mammals (oddly, amphibians and reptiles were not covered). One learns that during the glacial intervals of the Pleistocene the paleobotanical data show essentially no evidence of the persistence of grasslands anywhere in the region. Also in spite of the spectacular dominance and extent of grasslands in the region, there is relatively little endemism in plants, such insects as grasshoppers and lataline leafhoppers, fishes, mammals, and birds. What this low endemism stems from is not precisely known, but the fact that some endemism exists and that it seems older than post-Pleistocene suggest at least circumstantially that grasslands must have persisted somewhere during glacials to harbor the dependent species. Unfortunately, very little probing is done of possible refugial areas and modes of evolution of these endemics, and I find this the major shortcoming of the work.

Mengel's paper on birds is divided into several parts, the first being an enumeration of the breeding avifauna (37 species) of the plains, among which 12 species are considered endemic. Next he analyzes various avian distributions in North America *surrounding* the plains, followed by a discussion and elaboration of the possible mode of evolution of some of that avifauna—using the model that he first developed in the *Living Bird* (1964, 3: 9-43).

Basically, the model is one that sets up the Great Plains as a barrier (primarily of grassland), which served to separate certain mainly forest birds into east-west populations during glacial periods and thus allowed them to speciate. I shall not go into the model, except to say that arguments that the plains region ceased to be a treeless barrier—and thus unlikely to have separated glacial-age forests and their birds—still hold (e.g. Hubbard 1969, *Auk* 86: 393-432). However I concede that the idea of a north-south montane barrier of ice and tundra to accomplish such a separation may require some modification, possibly to the point of including adjacent eolian regions in the Northern Plains. The important point is that in the face of the paleobotanical data, a model based on the supposition of glacial-age grassland in the Great Plains is the shakier alternative.

At any rate, Mengel has written an interesting and provocative paper on the subject of evolutionary models for North American birds, and I recommend it highly. Through papers such as this, perhaps in time the keyhole through which we now view possible mechanisms of avian evolution will give way to an opening door on the subject. In the meanwhile, volumes such as this and authors like Mengel, Hibbard, Hoffman, Wright, and others will have been instrumental in the process. Incidentally, for those with limited interests and/or budgets, reprint copies of individual papers may still be available from specific authors.—JOHN P. HUBBARD.

**Philippine birds.**—John Eleuthère du Pont. 1971. Delaware Mus. Nat. Hist. Monogr. Ser. No. 2. Pp. X + 480, 85 col. pls. by G. Sandström and J. R. Peirce. Cloth. Order from the Museum, Greenville, Delaware 19807. \$35.00.—The Philippine

Islands, one of the most fascinating parts of the zoological world, are inhabited by myriads of birds, many of which are known only from a few specimens and others of which undoubtedly remain to be discovered. The Philippines number more than one thousand islands, and these have served as stepping stones for the Oriental fauna from the north and the Indoaustralian from the south. These factors and various geological events have produced numerous semispecies and superspecies among Philippine birds, and the number of endemic species is probably larger than in any other land area of similar size. The Philippines offer excellent opportunities for studies of avian evolution, but a first-class handbook giving at least taxonomy and distribution is a necessary prerequisite. It is peculiar, therefore, that so few books have been written about Philippine birds.

The basic handbook on the Philippine birds is McGregor's classical "Manual of Philippine birds" (1909), outdated now and totally based on the binomial system, but with excellent descriptions and reliable even in the smallest details. Hachisuka's sumptuous "Birds of the Philippine Islands" (1931-35), while extremely faulty and not containing much new, was supplied with beautiful color plates by Japanese artists and has good historical and bibliographical sections. The third book, "Birds of the Philippines" (1946), by J. Delacour and E. Mayr, is an excellent modern treatise, containing relevant information but few illustrations. In the 25 years that have passed since that book was published, a large number of expeditions have collected a wealth of new material, including many novelties, so that a new work on Philippine birds became highly desirable. Now the desire has been realized through the efforts of a young and dynamic student and newcomer to the field, John E. du Pont.

"Philippine birds" is a beautiful piece of work, well printed and with color plates showing virtually all species known from the islands (a peculiar exception is *Phapitreron cinereiceps*). The production of the plates is excellent, the birds are in most cases easy to recognize, and the coloration of the plumage and soft parts appears to be correct. Both the illustrators are skillful artists, Sandström in my opinion the better, and many birds are natural and full of life. Not all figures are good, as quite a few are of peculiar shape and look like old and badly mounted specimens.

The text is very short, unfortunately, and must be regarded more as a checklist with brief descriptions than a real handbook. Ecological and biological notes are completely lacking, although the author does say in his introduction that "the ecology and habits of these birds is sparsely known, and such a task for the future would be done best by workers who have lived in the Philippines and made field observations over a period of several seasons." This may be true so far as detailed descriptions of life habits are concerned, but it would not have been difficult to add notes on habitat, egg-laying, etc., from what has been described in literature. Besides, du Pont has worked in the Philippines and would no doubt be able to contribute to the subject himself.

The accounts of each subspecies consist of the name, with original reference, a description in two to four lines, and the range, giving only the names of the islands inhabited by the form in question. For the initial subspecies there are, additionally, colors of the soft parts and the measurements, but only the mean is given. This is unsatisfactory when the object is a judgment of mensural subspecies, and sometimes measurements are not given at all. In the case of *Coracina morio* we learn that the subspecies *elusa* has a wing of 132 mm and that of *everetti* 126 mm. The latter differs from *elusa* only in being smaller, but nothing is said about

the range of the measurements or the number of specimens measured. Farther on, the form *lecroyae* is said to have a shorter wing, and *ripleyi* a longer one, but no measurements are given. The last form, *mindanensis*, is described without any remarks on the size.

Such descriptions as the above do not give an idea of the constancy of the subspecific differences, size trends, relations between size and climate, etc. Nor can one find out relations between size and elevation, because nowhere is mentioned whether a bird belongs to the mountain or to the lowland fauna, although the two biomes differ widely and are inhabited by different birds. For instance, the ranges of both *Basilornis miranda* and *Phylloscopus olivaceus* are given as "Mindanao" (the latter species has a wider range), yet the two never meet on Mindanao, as the first is a mountain and the latter a lowland bird. Delacour and Mayr (ibid.) call *Phylloscopus olivaceus* "An inhabitant of the lowland forest" and say that *Basilornis miranda* is "Restricted to Mt. Apo, Mindanao, at about 8000 feet, in true mountain forest." Why could not something similar be said in the new work? This would have made it much more usable, for as it is now the text is much too short to be of any great value for the serious student.

On the other hand, it should be added that the general distribution given of the various forms is quite correct, so far as I have been able to discover. A map ought to have been added and possibly a gazetteer with the names and positions of the numerous islands, as many are probably unknown or very little known to most readers. In my opinion, the extralimital distribution should have also been mentioned for each species. For example for *Oriolus xanthonotus* a number of forms are mentioned, but not the nominate one from Java, and for the widespread *Oriolus chinensis*, which is distributed from Siberia to Celebes, only its Philippine range is given.

As a checklist the book is complete, insofar as no names seem to have been overlooked or misinterpreted. The synonymy of names from this century is complete, but part of the older names have been omitted, including some with Philippine type localities. The judgment of which subspecies should be accepted and which synonymized seems at times fortuitous and almost random. Why some are synonymized and others accepted is not explained, and in many cases the conclusions are questionable. I cannot avoid the impression that the ambitious author wrote the whole book in a haste. He mentions, for example, in his bibliography Parkes' 1971 work on Philippine birds, Nemouria No. 4 (du Pont's own periodical), but apparently paid less than full notice to some of Parkes' conclusions. For example Parkes showed that in *Nectarinia sperata* the forms *theresae* and *davaoensis* are synonyms while *trochilus* is acceptable, a viewpoint with which I quite agree. Du Pont, however, accepts *theresae* and *davaoensis*, but rejects *trochilus*. Further Parkes showed that the range of *Culicicapa ceylonensis* is incorrectly extended to the Philippines, where it has never been collected. Still du Pont includes it among the Philippine birds, erroneously giving the range "Palawan." In a paper he wrote with M. de Schauensee (1962, Acad. Nat. Sci. Philadelphia, vol. 114), du Pont accepted as valid the race *Coracina mcgregori peterseni*, yet here he places the name in the synonymy of the nominate form—with no explanation for the change of mind. In the Drongo Cuckoo he has oversimplified the geographical variation: *Surniculus lugubris mindorensis* Ripley and Rabor 1958 is regarded as a synonym of *chalybaeus*, but is a perfectly valid form, easily recognized by its giant proportions. Equally *suluensis*, described by me, is considered a synonym of *velutinus*, but it is also a good form, with a very long tail, measuring 115–121 mm compared with

98-108 mm in nominate *velutinus*. It is still more peculiar that du Pont does not recognize my *Dicaeum nigrilore diuatae*, which is extremely well-marked. In this case I know that du Pont has not even seen this form, because all the material belongs to the Zoological Museum in Copenhagen, from which he has not borrowed it. On the other hand, many of the forms described in recent years and accepted by du Pont are so weak that a close scrutiny of the material would undoubtedly have resulted in their rejection. Further I do not agree that *Rhabdornis grandis* is a geographical race of *R. inornatus*, as it differs so remarkably in size, the long tail, the long curved bill, etc. The so-called *Turnix sylvatica celestinoi* is actually a race of *T. maculosa*, a species not mentioned at all.

The bibliography is far from complete if the intention is to give a list of literature on Philippine birds. Much of the literature from the 19th century is omitted. Perhaps the bibliography includes only works used in the preparation of the present book, but it is peculiar that Linnaeus' *Systema Naturae* (1758) is mentioned, whereas R. Bowdler Sharpe, who described Steere's collection and wrote many other papers on Philippine birds, has been quite forgotten. Other omissions are many of Ogilvie Grant's and Tweeddale's papers, Guillemard, and others. Not a single paper written in German is mentioned, which suggests that Stresemann, Kutter, Martens, etc., were ignored.

The work is really well-printed, virtually without printer's errors. I have found only one: the Palawan subspecies of *Phylloscopus trivirgatus* was named *peterseni*, not *petersoni*.

As said already, the illustrations are generally good and most are very well-suited for identification. Perhaps as a result of haste in making the book ready for publication, some of the figures have had their captions confused. In plate 34, *Bolbopsittacus lunulatus* and *Loriculus philippensis*, and in plate 81, *Dicaeum bicolor* and *D. aeruginosum* are switched. In plate 80, figure G is said to be a female *Arachnothera longirostra*, but it actually represents a male *Aethopyga siparaja*, while the so-called male *Arachnothera longirostra* on figure F is a female *Aethopyga siparaja*. The illustration in plate 79 of *Aethopyga primigenius* is one of the few figures that is really bad, for it does not look like the bird at all; the gray color should not be restricted to the head, but should be extended onto the back and breast. In plates 7-8 the surface-feeding ducks are represented by males in winter plumage, which is quite natural, except for *Anas querquedula* which is shown, for some strange reason, in summer (eclipse) plumage. In the plates showing other migrants from the north the birds figured are most often in winter dress, which is a good idea because in the Philippines the birds will be met in this plumage. In some plates, e.g. number 19, it is stated that the birds are in winter plumage, while in others nothing is said, e.g. plate 20 of *Charadrius mongolus* and related species. As winter plumages may be very different from the corresponding summer dress, this should have been indicated. Even in the text, winter plumage alone may be described, without any indication of which dress is meant. Readers may think that the bird looks the same the whole year through. In plate 74 the different species of wagtails likewise are illustrated in their winter dress, but on the same plate *Anthus cervinus* is shown in summer dress (with shiny red throat) and in the text only this dress is described, in spite of the fact that this species is infrequently found in this plumage in the Philippines.

Summarizing, I may say that "Philippine birds" is beautifully executed and has well-reproduced plates, but the book is disappointing. The text is much too short, there are much too little of information, seriousness, and labor behind the work,



and there are quite a few mistakes. As it covers all the newly described results of a great number of expeditions, it may serve as a usable checklist. Although the author in his introduction states that the purpose of the book was to present "a ready identification guide of all the known Philippine birds," the readers of such a pretentious and expensive book would have preferred a work that could even have stimulated future scientific investigations.—FINN SALOMONSEN.

**Man and birds, evolution and behavior.**—Andrew J. Meyerriecks. 1972. Indianapolis, Indiana, Pegasus (A Biological Sciences Curriculum Study Book). xi + 209 pp., 48 figs. Cloth. \$6.95.—Added to the many slim books introducing portions of the latest in "current concepts" or "foundations" of biology to the undergraduate, we have this attempt to teach of evolution and behavior using only birds as exemplars. The try fails as a result, I think, of two basic difficulties, one of which should be of intrinsic interest to most ornithologists, to wit: As seminal as avian biology has been in both fields of this book's endeavor, Meyerriecks inadvertently demonstrates (in the section on evolution, for example) that the likes of *Drosophila*, *Cepaea*, *Tribolium*, *Mus*, *Danaus*, and *Anolis* simply cannot be excluded from any general coverage of a topic including fitness, competition, mimicry, endemism, reproductive potential, genetic variability, mutation, dispersal, and so forth. Meyerriecks tries and is frequently left with little or nothing for his effort. To cite a simple example: mimicry is discussed (very briefly) using Zone-tailed Hawks *vis-a-vis* Turkey Vultures—legitimate though a good deal more problematical than is implied, and by speculating that bright plumage in some (edible) bird species mimics the plumage of other (inedible) ones. The latter idea is unsubstantiated so far as I'm aware (where are you butterflies?)—additionally, it seemingly has obviated the possibility of any subsequent discussion of conspicuous plumage and sexual selection, an area where birds *would* seem to provide the perfect models.

For his section on behavior (an entirely different minibook, really) Meyerriecks adopts a different tactic; here he talks only of "Territory," "Bird Communication," and "Brood Parasitism" (his chapter titles). For behavior, then, while we are left with a thin slice of the topical pie, at least we might hope to have a relatively tasty bite or two from it. That we don't by and large points up this book's second failing: It is almost entirely nonanalytical, completely descriptive, and loosely (see the quote below) written. The whole proceeding has a superficial ambience that should leave the average uninitiated reader looking elsewhere than to birds for subsequent action. We do read that avian territoriality may or may not relate to apportioning food resources, maintaining a pair bond, avoiding predators, etc., but we have only the briefest passing reference to the relationship of territory with population size and structure or with habitat quality; group territoriality receives just over a page of description without mention of any possible *raison d'être*; for flock alarm calls (p. 161): "[the caller] does not want to be taken as prey by the hawk, yet there is an advantage *for the species* [my italics] in alerting the others to the source of danger." The idea of altruistic behavior is not considered here or elsewhere.

Returning again to the section on evolution we find the going murkier still. By my reckoning one is 64 pages into the book before he finally finds a clear, simple statement integrating variability, heritability, and adaptation, all of which have been dealt with separately and together since the beginning. Early on a couple of atrocious algorithms purport to elucidate artificial and natural selection, but

skip them or you may find yourself attributing the evolutionary process to divine will alone. Evolutionary thinking further receives the disservice of (p. 65): "One way to take advantage of. . . resource diversity is to diversify yourself." Bird species are defined adequately according to the standard biological precept, but Meyerriecks' most peculiar example leaves the reader aware that Mourning Doves behave as good species towards both Eastern and Western Meadowlarks but perhaps a bit confused as to what the meadowlarks think of each other (why both meadowlarks, or why the dove?). The corker, for me at least, comes with ecological competition and Gauss' Principle (p. 83): "Or, one species solves the problem, so to speak, by leaving the situation, going elsewhere in an attempt to survive" (are we to envisage an avian hegira or The Chickadees' Trail of Tears?). Several other authors (still notable is A. J. Cain's "Animal species and their evolution") have shown how to treat these or related topics with simultaneous sophistication, brevity, and lucidity; this work falls well beyond their pale.

And finally there's a title, *man* and birds, presumably promising some kind of "relevancy" to those who value their whole-earth catalogs and libraries of Desmond Morris or Jane Goodall. Possibly the anthropomorphic phraseology permeating this book represents an attempt to have the reader view himself as an evolutionary or behavioral microcosm? Even if Meyerriecks' analogies (if that's what they are) may often be apt enough in that context, I doubt whether any self-awareness engendered will be more profound than the reader's understanding of the analogous avian phenomena. And such understanding, if based on this book alone, will be woefully shallow.—DAVID M. NILES.

**Les oiseaux du Québec.**—Raymond Cayouette and Jean-Luc Grondin. 1972. Orsainville, Québec, La Société Zoologique de Québec, Inc. 117 pp., 73 line drawings, and front and back color covers by Jean-Luc Grondin. \$3.00 (Canadian).—This large format soft cover book ( $8\frac{1}{2} \times 11$  inches), with attractive color drawings of the Eastern Meadowlark on the front and of the Bobolink and Red-winged Blackbird on the back, describes and illustrates 243 species of birds. It contains a table of contents, a preface, 100 pages of text and illustrations, an index of French official and colloquial names, and an index of English names.

The authors have followed, in most cases, the sequence of the A.O.U. Check-list, fifth edition (1957), but have modified it slightly, apparently to accommodate the text and illustrations on a given number of pages (for example the phalaropes have been placed between the Charadriidae and the Scolopaciidae). I do not find this very disturbing in a book meant primarily to be a general introduction to the birds most regularly found in Quebec Province, but I wish the title had been "Oiseaux du Québec," as it does not cover all the species known to have occurred in the province (over 350).

Most of the major groups of birds in the book correspond in general to the currently recognized families. In many cases, they are introduced by a short descriptive paragraph presenting interesting and pertinent facets and/or the general characteristics of the group (family or subfamily). One wishes that the authors had provided such introductory paragraphs for all groups.

A short, well-written text accompanies each of the species depicted. The authors give information on the coloration of the bird, some data on life history, and a brief outline of the range in Quebec. Total length and wingspan are provided for most species. Generally speaking, the information supplied is accurate, though I

have noted a small number of inaccuracies and a few errors: the "Blue Goose" is now considered a color phase of the Snow Goose; it should have been pointed out that the Peregrine Falcon has disappeared as a nesting bird from southern Quebec; the red comb of the Spruce Grouse is not air inflated; the drumming of the Ruffed Grouse is not produced by the beating of the wings against its flanks; Venezuela is always written without accents in French; the Black Tern has been in Quebec longer than a few decades; the Starling was recorded in Quebec for the first time at Betchouane in April 1917. Several of the ranges in Quebec should be revised and brought up to date.

I also noticed a small number of typographical errors (fewer than 20) and that the print is slightly bolder in certain places, probably the result of corrections as the book was printed by offset. Still, the print is clear and neat, and the layout very attractive.

The color drawings of the covers are very good, particularly the Eastern Meadowlark. I am pleased at the overall high quality of the line drawings generously scattered throughout the text. Artist Grondin shows a great talent for a first attempt at book illustration. Many of his drawings compare very well with the best line drawings I have seen. The texture is usually soft and pleasing, although it is somewhat harsher than it should be in a few species. The postures are generally correct, although the vireos and a few finches are not as successfully done as the other birds. The backgrounds and settings are usually simple and carry an impression of freshness.

Despite the inaccuracies pointed out above, the author and artist are to be congratulated for such a good job. I am still wondering how La Société Zoologique de Québec managed to produce so much for so little.—HENRI OUELLET.

**The avian brain.**—Ronald Pearson. 1972. Academic Press, New York. i-xi + 658 pp., 140 figs., 88 tables. Cloth. \$31.00.—This is a magnificent book on current knowledge of the avian brain. The embryology, biochemistry, and vascular system are discussed, and separate chapters are devoted to the several regions of the brain (medulla, cerebellum, mesencephalon, diencephalon, forebrain), to the ear and hearing, the eye and vision, the hypothalamohypophysial portal and neural systems, electroencephalographic activity, experimental studies (stimulation and ablation), and the relative development of different brain regions among birds. The numerous tables and figures summarize a tremendous amount of information, and an extensive list of references completes each chapter.

Of special interest to nonanatomical ornithologists are Pearson's competent discussions of the results of experimental studies related to behavior and physiological activities: e.g., thermoregulation, cardiovascular responses, the intake of food and water, and the control of ovulation. He also discusses the poorly understood relationships between embryological development (incubation time) and nestling period among precocial and altricial species. He writes (p. 607) that "the process of myelination also confirms the fact that post-embryonic development is a function of taxonomic position rather than a reflection of the period of incubation."

The avian brain differs from that of both reptiles and mammals in having a specialized portion known as the hyperstriatum. The striatum is overlain only by a thin covering of white matter, and authorities disagree as to what, if any, part of the avian cerebral hemispheres is homologous to the neocortex of mammals. Part of the hyperstriatum, called the *Wulst*, forms a bulge on the dorsomedial surface of each hemisphere in some birds. After discussing attempts to determine fixed loci in the

Wulst and in the ventral hyperstriatum, Pearson comments that "such results clearly imply a fairly close functional integration between all the regions of the Wulst. This is especially so in view of the fact that the topographical organization seems to be continuous over the whole complex. If it is true that this representation does not extend into the ventral hyperstriatum it is yet further and non-anatomical evidence for the individuality of the Wulst. It also emphasizes the unfortunate historical accidents by which the structures above the hyperstriatic lamina share a common name" (p. 550).

Discriminative learning also apparently occurs in the hyperstriatum, but Pearson remarks (p. 541) that "again the situation is not straightforward because of the absence of specific distinctions between the ventral and dorsal striatal components."

The role of hormones in stimulating male or female behavior is well-known. Electrical stimulation of several parts of the diencephalon also produces manifestations of courtship behavior in pigeons, such as the bowing action, the nest demonstration sequence (nodding movements and a nest call), and displacement preening. Stimulation of other areas of the diencephalon results in defensive or escape reactions.

Direct electrical stimulation of the avian brain was performed as long ago as 1879, and extirpation experiments have been conducted for nearly a hundred years in efforts to define loci and to trace nerve tracts throughout the brain. Pearson rightly implies that most of this work must be repeated because the tracts that have been described were based on "normal stained brain sections. Others were the results of lesion experiments. However, these all pre-date the introduction of the Nauta-Gygax staining method" (published in 1951).

Chapter 16 should be of special interest to both ethologists and taxonomists because it deals with the relative development of different brain regions throughout the orders of birds and, consequently, with the presumed greater "intelligence" of certain families (e.g., Corvidae). The evidence seems to suggest, however, that the full significance of the several types of brain indices remains to be determined. Among the Passeriformes, the corvids do have the highest indices (that is, relatively larger cerebral hemispheres), but comparable indices occur in such unrelated birds as storks (*Leptoptilus*), pelicans, owls, parrots, and woodpeckers.

"It is certainly worth emphasizing that the two homoiothermal stocks [birds and mammals] have had a widely divergent phylogenetic history at least since the Permian period, some 280 million years ago, and possibly since the Carboniferous, some 300-340 million years ago. . . . In terms of such phylogenetic considerations any trite analyses of avian brain function in terms of supposed nuclear homologies in the mammalian brain are clearly dangerous. However, it is extremely interesting that many of the recent data confirm that numerous homologies and analogies do exist between the demonstrable functions and biochemical composition of units situated at medullary, cerebellar, mesencephalic, diencephalic and paleostriatal levels. The differences in the basic organization of other hemisphere regions render any detailed comparison somewhat pointless except in terms of generalized control of integrative functions" (p. 617).

The author is to be congratulated on a scholarly contribution to the avian literature.—ANDREW J. BERGER.

**Proceedings of the XVth International Ornithological Congress.**—K. H. Voous (Ed.). 1972. Leiden, Holland, E. J. Brill. viii + 745 pp., 20 black-and-white plates, various figures and tables. Cloth. By subscription to Congress members only.—

This is intended not as a review but a notice of the publication of this latest I.O.C. volume, covering the meeting held at The Hague on 30 August–5 September 1970. Most important (688 pp.) are the texts of the presidential address by Finn Salomonson (title: Zoogeographic and ecological problems in arctic birds), symposia, and abstracts of 146 of the 148 papers (in alphabetical order by first author). The symposia, in order of appearance, are: Population dynamics and ecology of the Tetraonidae—5 papers (Chairman: J. F. Bendell); environmental physiology in birds—5 papers (D. S. Farner); development of behavior in birds—5 papers (J. P. Kruijt); evolution of pairing behavior in birds—4 papers (J. H. Crook); man and birds, the mounting threat of chemical pollution—8 papers (J. J. Hickey); causal ornithogeography—5 papers (E. Mayr). The remaining few pages are devoted to a writeup of the meeting itself, various reports and appendices, member lists of offices, committees, and attendance, and an index to generic level and lower taxa in the scientific papers.—JOHN P. HUBBARD.

**A catalogue of the Ellis collection of ornithological books in the University of Kansas libraries.**—Robert M. Mengel. 1972. Lawrence, Kansas, Univ. Kansas Publ., Library Ser. 33, vol. 1 (A-B). xxix + 259 pp. \$10.00.—Ralph Ellis, Jr., died in 1945 at the age of 37, after having spent most of his short, illness-plagued life in a voracious search for books. He had one of those well-developed cases of bibliomania, the sort where one buys entire shelves at a time of remaindered items labelled “natural history” or “birds.” Often bibliomania is a compensatory sort of disease, making up for some real or fancied deficiency in the person possessed of it. Ellis was by no means an ornithologist, or really a field naturalist, as presumably his ill-health, lack of formal education, and a certain instability prevented him from applying himself as rigorously as that would have required. Nevertheless, he was zealous in his collecting, and I remember lunching with Jean Delacour at the Century Club during World War II in order to meet him. He had asked Delacour’s advice about what to do with his collections. Ellis bubbled over with excitement, with an inner fire of enthusiasm about book collecting that was the telltale sign of the bibliomaniac. The only other person I had met quite like him was Orlando Weber, Jr., who could be as similarly carried away. As it turned out there was no need for advice, because Ellis seemed directed towards the University of Kansas, and settled upon it for his 25,000 mostly ornithological bound volumes and miscellanea.

It was as well that all this happened, for at Kansas the collection found not only a home but also a dedicated bibliophile. Robert Mengel states in his preface to this first volume on the Ellis bird books that he is a bibliographer “by accident.” That may be true, but if he has come to this by accident, he must by now have succumbed to bibliophilism. Mengel has been at his labors for 20 years and this first volume to be published covers only the letters A and B and includes some 454 items.

This catalogue of books now joins the ranks of the bibliographies of other collections, such as those at McGill, the Field Museum, Copenhagen, and Yale in the field of ornithology. No one has yet been able to amass a comprehensive bibliography of *all* publications that can be described as *books* with “appreciable ornithological content,” to quote the author. Only larger works such as Union Catalogues and the British Museum Catalogue attempt to keep a fully comprehensive list, and only publications such as the Zoological Record can maintain an approximation of a current author list of publications in books and in journals. Unfortunately, no one bibliography is ever going to contain everything, especially of certain earlier publications,

where attrition has promoted rarity. Thus, some obscure titles and volumes will remain squirreled away in libraries, inaccessible even to bibliographic retrieval.

For those of us who have dabbled in bibliography and are not professionals, there is always an infinity of choices to be made. Mengel has gone at his job more thoroughly than anyone else to my memory. His citations by entry, author, dates, indices, description, and subsequent collations are comprehensive. In addition he includes a thorough description of the contents of each volume, not always cited in works of this kind. Finally he makes his own comments on the volume and its merits or demerits, always a most useful addition. Where he considers that a significant reference to an existing bibliographic work is needed, he concludes with a referral to volumes such as those by the late Casey Wood. In style this bibliographic treatment is more like that of Coues, or more recently, John T. Zimmer's celebrated "Catalogue of the Edward Ayer Ornithological Library at the Field Museum"—one I always considered to be the compendium *summum bonum*. Perhaps if time is on his side Mengel's compendium will become known to future scholars as the most comprehensive of its kind in print.

Leafing through the pages of this first volume and comparing them to my own, far more abbreviated bibliography (much more a list of holdings than anything else), I am awed by Mengel's detail in describing Buffon's work, which cumulatively consumes some 13 pages of text. Granted there are more than seven different titles, representing to a large extent, Buffon's "Natural history of birds" and his "General natural history"; still the collations and listings seem masterly. This treatment alone can be considered the definitive rendering of Buffon's work in bibliographic terms. Yet, to complete what is one of the most complicated of bibliographic sortings-out in ornithological literature, one would have to collate Zimmer, the British Museum Catalogue, and presumably items still to be discovered in Paris and elsewhere. Thus there still remains an immense task in fully rendering the bibliography of this 18th century author, who has been so much reprinted and bowdlerized.

In Mengel's first volume I miss British Museum publications. I cannot find out from the introductory text why they should not be included under "B," as they are in other bibliographies. Surely the Ellis collection must include them? In any event, Mengel is to be congratulated for his persistence and application, which have indeed turned him into a master of bibliography.—S. DILLON RIPLEY.

**Aves de caza colombianas.**—José Ignacio Borrero H. 1972. Publ. Dep. de Biología, Universidad del Valle, Colombia. vi + 79 pp., 14 plates by Margot Brachholz, 1 fig. In Spanish. Paper. No price given.—This work treats 123 species that are considered at least potential gamebirds in Colombia, with 95 illustrated in black-and-white renderings of plates originally done in color. The species range from North American migrants (e.g. ducks, sandpipers) to the many native birds, such as tinamous, guans, and pigeons. Each species is described and its Colombian range given, with grouping by family. Remarks on each of the 10 families range from brief comments on number of species treated and similarity to other families to details of habits, habitats, and methods of hunting. The introductory section defines gamebirds, describes hunting in Colombia—including in relation to avian distribution and migration, and discusses conservation of the marshlands and conservation legislation. There is also a drawing of a duck with the parts labeled, indices of Spanish and Latin names, and a short bibliography. The author has produced a guide for field use and a basic compendium on his subject, the latter which may aid in fomenting hunting regulations and possibly awakening a conservation conscience in the

country. Aside from several typographical errors in scientific names, this is a well-done treatise, deserving wide distribution in Colombia and attention elsewhere.—

JOHN P. HUBBARD.

**Born to sing.**—Charles Hartshorne. 1973. Bloomington, Indiana Univ. Press. xvi + 304 pp., several figures and tables. \$10.00.—The first problem in reviewing any book is to assess the nature of the audience that the author is trying to reach. It is my impression that Charles Hartshorne, a philosopher, is attempting to reach not only other philosophers, but scientists, aestheticians, musicians, and bird watchers as well. In seeking to satisfy such a diverse group, he has had to compromise and, in some cases, overextend himself to the point where he cannot fully satisfy any of them.

The title itself has a popular ring. It is a pleasant-sounding but teleological expression, anathema to most, if not all, scientists. His evaluations frequently involve quantified subjectivity and statistical methods that are not explained. The language is more that of a philosopher—and in his defense this reflects much of the author's objective—rather than that of a student of bird sound.

In terms of effort—traveling to get first-hand experience with the world's more notable songsters, obtaining recordings where necessary and available, and reviewing the literature about these birds—the author is to be commended. His ideas on the monotony threshold and song continuity can be supported by actual data. His estimates of the amount of total annual singing are more tenuous, though the concept that better singers sing more may have validity. His numerical evaluation of the six characters—loudness, scope, continuity, tone quality, order and imitative ability—provides a good general list of categories by which to assess singers. However, the numerical scale (1 to 9 for each) is nowhere defined and is apparently subjective.

The relationship between song characteristics and ecology suggests a fertile field for study, particularly as the details of sound are related to the acoustic properties of the environment. Since bird song is adaptive, it is obviously the result of selective pressures, both physical and biological. These forces mold the parameters of sound, so that it achieves its functions. Whether a thing is "beautiful" to the bird is speculation, as the bird's nervous system is somewhat different from ours. Also the differences in time resolution between the ears of birds and men certainly must be significant. One might argue, therefore, that bird songs are more frequently beautiful to birds than to man.

Hartshorne's deprecation of spectrograms seems stronger than necessary. As befits a scientific approach they are quite consistent in graphic reproduction of the same sound, and without them such things as the differences between some species or a study of the fine details of structure would not be possible. True, they are poor for recognizing or remembering species' songs, but other graphic methods or syllabifications of human interpretations are little, if at all, better for most bird observers. Recordings still seem to be the best method for conveying recognitions of the sounds to humans. Tracings of spectrograms, a compromise method, usually lose the harmonic detail of the original spectrogram and are too detailed to be useful to most students of bird song.

In this book few scientists will be able to accept outright many of Hartshorne's interpretations. The book does provide lists of those species that are appealing musically to man, though the relative ranking would vary greatly with personal taste. It is a book with a different approach. It will have limited appeal to the

scientific end of the ornithological spectrum and moderate appeal to other students of bird song, at best.—ROBERT C. STEIN.

**The sign of the flying goose—the story of our National Wildlife Refuges.—**

George Laycock. 1973. Revised ed. Garden City, New York, Anchor Press/Doubleday. xiv + 265 pp., 14 maps. Paper. \$2.95.—Begun in 1903, in a presidential decree by Theodore Roosevelt (setting aside a Florida breeding area of the Brown Pelican), the National Wildlife Refuge system now includes more than 300 entities. Sustained in large part by the sale of Duck Stamps and devoted primarily to game animals, these refuges are visited by increasing numbers of people seeking to observe their often rich biotas and sometimes marvelous scenery. Birders form a large part of the ranks of the visiting naturalists and will find interesting reading on the 145 refuges in 44 states described in this book. For most of the refuges the address, size, date founded, and a brief biotic commentary are given, but 17 are described and mapped in much greater detail. Among the more interesting to birders in the latter group are Aransas, Texas (for Whooping Cranes); Red Rock Lakes, Montana (for Trumpeter Swans); and, especially for waterfowl, Tule Lake, California, area, and Brigantine, New Jersey. A 2-page frontispiece map shows most of the refuges, including the few in the Caribbean.—JOHN P. HUBBARD.

**The Dotterel.—**Desmond Nethersole-Thompson. 1973. London, Collins Sons.

288 pp., 1 color photo, 15 black-and-white photos, 8 figs., 6 maps, 5 appendices followed by 24 tables. £ 3.50.—Many avian researchers pick a species that is easy to study, define a specific problem, gather the required data, and publish a short report of the work. This process has been fruitful, but Nethersole-Thompson has spent his life using quite a different approach. He prefers to select species that are difficult to study, define the species as the problem, spend years collecting data, and then culminate his work with the publication of a monograph. The present book is the third such monograph published by the author, and his results verify the validity of his technique.

Nethersole-Thompson has spent over 30 years observing Dotterels (*Eudromias morinellus*) in the Highlands of Scotland, and this book summarizes his findings and includes the observations of many other researchers. Adam Watson and Raymond Parr present a special section on "Timing of reproduction in Dotterel and Ptarmigan" and D. A. Ratcliffe contributes two chapters dealing with "Breeding habitat of the Dotterel in Britain" and "The Dotterel as a breeding bird in England." The book contains essentially everything known about this elusive species.

The first three chapters serve as a historical introduction, with the past persecution of the Dotterel described and the effects of egg collectors evaluated. Chapters 4 through 12 comprise a detailed description of breeding biology and behavior. The data are presented in a popularized style, with Nethersole-Thompson frequently using anthropomorphic phrases such as "cock Dotterels are sometimes lusty" and terms like "nest dancing" in place of the terminology used by other researchers. Also, a selected bibliography is used and at times it is hard to tell whether a reference is based on personal correspondence or a specific publication. For instance, D. F. Parmelee is quoted, but he has two citations in the bibliography.

Chapters 13–20 deal with population densities, habitat preferences, feeding ecology, and breeding status throughout the Dotterel's range. Chapters 15 and 20 both deal predominantly with breeding ranges and they could have been combined.



In Chapter 21 the future of the Dotterel is discussed. The appendices include records of this species in Scotland and England, and information on plumages and parasites. The tables provide a wealth of information in support of statements in the text. The detailed index includes scientific names of animal species mentioned in the text.

Throughout the book numerous speculations are presented dealing with the adaptive significance of Dotterel behavior. The Dotterel has sex role reversal and is polyandrous. Nethersole-Thompson speculates that sex role reversal may have evolved because females could not meet the energy demands of both egg-laying and parental duties during frequent, harsh environmental conditions. Once females were freed from parental duties, he speculates that they would lay additional clutches whenever possible.

The author relies on identifying individual females by the coloration patterns of the eggs they lay, and based upon my own work with the Mountain Plover, I feel this is a risky technique. I think, therefore, that many details of the Dotterel social system need to be confirmed with marked birds.

Although the popularized style does pose some problems, the information presented should be of value to the researcher and to those concerned with the breeding status of the Dotterel. Everyone should enjoy the excellent photos and bird enthusiasts in general will find this an easy-reading and informative book.—WALTER D. GRAUL.

#### ALSO RECEIVED

**Birds of the Churchill region, Manitoba.**—Joseph R. Jehl, Jr. and Blanche A. Smith. 1970. Winnipeg, Manitoba Mus. of Man and Nature, Spec. Publ. No. 1. 87 pp., 13 black-and-white photos, 3 maps. Paper. No price given.—The Churchill region of Manitoba, on southern Hudson Bay, provides convenient access to many of the breeding birds of treeline and tundra habitats of North America. Several works have been published on the birds of the region, and the present one summarizes the information and adds new data as well. Overall, the authors briefly describe the Churchill area and its ornithological history, point out some biological changes, outline the birding possibilities, and provide an annotated account of 209 species reported there. The species accounts include details of status, arrival and departure dates of migrants, and breeding information. An appendix provides clutch size data for 47 species from the area, as well as a basic checklist and index (in systematic order) of the avifauna. There is also a short bibliography. Here and there are other tidbits of information, e.g., the method Common Ravens use to discover and rob Whimbrel nests, weights of newly hatched Hudsonian Godwits, and comments on Redpoll taxonomy. The habitat and bird photographs, including one in color on the covers of a tundra-timberline scene, are additional bonuses. All told, this thin volume is an informative and enticing summary of a biologically fascinating part of North America.—J. P. H.

**Birds of moor and mountain.**—Donald Watson. 1972. London, Chatto and Windus Ltd. Pp. xvi + 150, 38 plates—most of them in color, and a number of line drawings all by the author. £5.50.—This unremarkable book will appeal to bird watchers with an interest in Scottish highland landscapes and the birds of prey and game birds found there. The author-artist gives little time or space to small birds and

contributes no new information on the larger ones he has posed against his landscapes. He says in his introduction, "It will be clear from this book that the variety of small birds on treeless moors is limited," but they are not so limited as his book would lead one to believe; and he proceeds to speak of many passerine birds in the introduction that he has not included in his text or illustrations. Evidently he prefers, as do a few American bird artists, to ignore those that lack the dramatic appeal of big, bold, piratical species.—ELIZABETH S. AUSTIN.

**The world of the Wild Turkey.**—James C. Lewis. 1973. Philadelphia and New York, J. B. Lippincott Co. Pp. 158, 85 black-and-white photos. \$5.95—Books about game birds are usually designed to be bought by sportsmen and the nonscientific public, at least that is true of five of the seven books that have been written so far about the Wild Turkey. "The world of the Wild Turkey" makes it six out of eight. The author is well-qualified for the job and the book is attractive and easy to read. Literature citations are given for most of the factual statements in the text and the author writes about the turkey in a way that only a turkey biologist can. The book contains information on life history, behavior, hunting lore, conservation and management, and a good bibliography, but nothing new. It is free of the exaggeration, fakery, and factual error that form the core of virtually all purely popular accounts of the Wild Turkey. "The world of the Wild Turkey" will be of little interest to the scientist, but for everybody else I recommend it as a good primer about the turkey—which is what it was intended to be.—LOVETT E. WILLIAMS, JR.

**History of the birds of Kingston, Ontario.**—Helen R. Quilliam. 1973. Kingston Field Naturalists Publ. (P. O. Box 831). 209 pp., 27 black-and-white figures, 3 maps (2 foldout). Paper. \$4.95.—This is the second edition of a compendium on the birds, habitats, and ornithological history of the Kingston area, which centers on the juncture of Lake Ontario and the St. Lawrence River. The actual region covered is largely within a 30-mile radius centering on MacDonald Park in Kingston, a circle which takes in parts of three Ontario counties and includes Amherst, Wolfe, and other islands, and adjacent New York State. Emphasis is on the Canadian mainland, and treated are 303 species—a net increase of 13 since the first edition of the work in 1965. Individual species are covered in varying detail, including historical and modern records from the region, habitat and breeding data, migration, and specimens or photographic verification of occurrence. At the end of each account is a short summary of the present status. Introductory sections contain descriptions of ornithological history, changes in bird populations, and an outline of terms and references. In the back are a bibliography, an index, and an appendix that extends the cutoff date to November 1972—to include among other things the first record of the House Finch in the region. The black-and-white plates of habitat and birds are welcome additions, as are the maps; the front cover is graced by a Snowy Owl drawing. For those interested in birdlife of Ontario and vicinity, this is a book worth getting.—J.P.H.

**Familiar birds of Northwest forests, fields and gardens.**—David B. Marshall. 1973. Portland (Oregon) Aud. Soc. Publ., 84 pp., 73 color plates, 1 fig. Paper. \$2.50—Backyard birders will find this a simple way to start identifying the more conspicuous birds west of the Cascades and from northern California to southern British Columbia. Most marine and many alpine species are ignored, but one can still go from Glaucous-winged Gull to Clark's Nutcracker among the 157 species

that are treated. Arrangement and commentary are in systematic order, with 131 of the species illustrated in paintings by R. Bruce Horsfall and Zella M. Shultz and 2 others in photographs by the author. The brief introduction contains a useful section on attracting birds to one's property, and there are birding tips in the back. The work rates a mild success for beginners, but it is not apt to hold even moderate curiosity in check for long.—J.P.H.

**Catálogo de las aves uruguayas. Part 2, Anseriformes.**—Luís P. Barattini and Rodolfo Escalante. 1971. Scientific Publications of the Larrañaga Museum, Intendencia Municipal de Montevideo, Dep. de Arquitectura y Urbanismo, Dirección de Divulgación Científica, Montevideo, Uruguay. 142 pp., 9 plates (8 in color by Barattini) and other illustrations. In Spanish. No price given.—This continuing series on the avifauna of Uruguay is to be issued as groups are completed, not in any phylogenetic order. The first was issued in 1958 and covered Falconiformes, and it too was authored by Barattini (who died 14 September 1965) and Escalante. The present work is divided into two sections, the first covering field-marks, description, and habits, and the second nomenclature, synonymy, bibliography, distribution, and Uruguayan status. Included are the families Anhimidae (1 species) and Anatidae keyed out by subfamily (2), tribes (7), and species (20). All species are illustrated in color, except *Chloephaga picta*, which is in black-and-white only; illustrations show the downy young of over half the species. Taxonomic treatment in general follows Delacour and Mayr, with departures therefrom explained. Overall this is a well-done treatise and a useful summary on Uruguayan Anseriformes.—J.P.H.