ORNITHOLOGICAL LITERATURE

WATERFOWL OF NORTH AMERICA, by Paul Johnsgard, Indiana University Press, 1975: 575 pp., many line drawings, maps, and color and black-and-white photos. $25.00.—During the winter of 1970–71 Paul Johnsgard made an ambitious commitment to a book dealing with the ecology and reproductive biology of all waterfowl breeding in North America. He planned to integrate recent field studies by wildlife biologists, ecologists, and ethologists while at the same time presenting the material in a book understandable to nonprofessionals. Coupled with this intent was the desire to present practical means of waterfowl identification under both field and in-hand situations. In this lengthy and handsome volume, Johnsgard has admirably met his goals.

The book has two major divisions. The first is a tripartite introduction containing chapters on the biology of waterfowl, waterfowl distributions and migrations, and waterfowl hunting and recreational values. The second part contains species accounts for the waterfowl breeding in North America, including marginal species such as the Falcated Duck, Baikal Teal, Tufted Duck, and the introduced Mute Swan.

In the introductory material Johnsgard provides a characterization of waterfowl biology; the diversity of the group often precludes really incisive commentary. For example, "In most species of North American waterfowl the actual clutch size is variable, although the 'normal' size of initial clutches may be fairly predictable, especially in species having smaller clutches" (p. 6). No author faced with the vicissitudes of such biological phenomena as clutch size, incubation periods, and food habits can adequately treat these subjects in a generalized account. The problem is, of course, addressed satisfactorily in the species accounts that follow.

Each of the species accounts contains material on other vernacular names for the species, a description of the bird's range, subspecies (if any), measurements of folded wing and of culmen for each sex (often taken from Delacour's 4-volume treatise and thus lacking such details as sample sizes) and weights. These data are followed by a description of the bird in the hand and in the field, and an outline of age and sex criteria. An account of distribution and habitat is separated into breeding and wintering locations. The account of "General Biology" includes the following: age at maturity; pair bond pattern; nest location; clutch size; incubation period; fledgling period; nest and egg losses; juvenile mortality; and adult mortality. The penultimate section is entitled "General Ecology" and includes comments on food and foraging; sociology, densities, territoriality; interspecific relationships; and general activity patterns and movements. The final heading in the species account is "Social and Sexual Behavior" and here Johnsgard's intimate knowledge of waterfowl comes to the fore. Subheadings include flocking behavior; pair-forming behavior; copulatory behavior; nesting and brooding behavior; and postbreeding behavior. Each species has its own range map showing the bird's distribution in North America (distributions elsewhere, if any, are not shown but are mentioned in the text). In all, the coverage given each species is certainly sufficient for a book of this sort and one must commend the author for the awesome task of compiling details necessary to address this broad range of topics.

The volume is liberally infused with color plates of many species and with many additional black-and-white photographs (often of the same species appearing in color elsewhere). The species accounts are introduced with a pen and ink sketch by the author, thus adding further attractiveness to the volume. Many of the color plates are exceptional as, for example, the delicate photograph of an adult Trumpeter Swan that was also selected for the dust jacket. Other color plates are of lesser quality, for example, the

uncrisp photos of Buffleheads and Common Mergansers. The black-and-white photographs are necessarily less attractive and too often they are repetitive (for example, the Wood Ducks and Falcated Ducks).

In some cases Johnsgard deviates from the nomenclature recognized by the A.O.U. Among the systematic comments of note are the recognition of a complex, the "southern Mallards" consisting of *Anas platyrhynchos diazi* (Mexican Mallard), *A. p. fulvigula* (Florida Mallard) and *A. p. maculosa* (Mottled Mallard). He chides (p. 235) ". . . neither the technical nor the vernacular names used by the A.O.U. (1975) provide a clear indication of the relative relationships of these forms to one another or to *platyrhynchos*, and the A.O.U. decision not to recognize vernacular names for subspecies tends to maintain an unwarranted degree of taxonomic separation of these populations." This is a commendable position by a recognized authority on the problems of "mallard" taxonomy, and I applaud his forthright stance on the matter. The author likewise treats Brant as a single species with 2 races, *Branta bernicla hrota* (Atlantic Brant Goose) and *B. b. nigricans* (Pacific Brant Goose). The Hooded Merganser joins others of its group in the genus *Mergus*. Recognition of the North American dendrocygnids as "whistling ducks" brings this vernacular terminology into welcome agreement with ornithologists elsewhere in the world. There are other changes, but these serve to illustrate the nature of Johnsgard's systematic thrust in preparing this volume.

I did not routinely cross check all of the citations mentioned in the text with those cited in the extensive bibilography although I did check—perhaps immodestly—the accuracy of those attributable to me and my co-authors and found that one cited on p. 48 was omitted in the literature citations; the correct spelling for "Rolle" is Rollo on p. 217. Another includes Ferguson (1965) cited as Ferguson (1966) in the bibliography. There are additional slips, mostly in format, in the literature citations ("Sources") but none that impairs location of the original material. No citation is given for "A Utah Study . . ." on p. 296 or for the Bufflehead banding data noted on p. 459. There may be similar errors throughout the text but these are, after all, rather minor miscues that inevitably creep into a work of this scope.

Perhaps my most critical comments are reserved for the lengthy, and therefore confusing, sentences dotting the text. "Although among geese and swans the parental attachment for the young persists through the entire post-hatching period and the following migration, the brood bond of female ducks toward their offspring is much weaker and more variable, presumably being dependent on hormonal controls" (p. 7) is both lengthy and awkward. Some tight editorial work would have helped the text in several places. Johnsgard can be pithy, if long, however. The last paragraph on p. 22 is a fine example. He writes, in part ". . . the sight of a migrating goose flock represents far more than a simple measure of the passing seasons; it is an unwritten testimony to dogged persistence in spite of adversity, to an inherited trust in this species' long-term design for survival in the face of individual starvation and violent death. It is an example that should lift the human spirit; despite indivdual disasters, the geese endure. We can ask for no greater symbol of determination despite appalling hardships than is provided by waterfowl; we should be content with no less than a maximum commitment to their continued existence." Save for long sentences and the questionable inclusion of several photographs, there is little to fault in this *tour de force* of North American waterfowl.

The past year has witnessed the publication of several important books on waterfowl, perhaps justifying the designation, "Year of the Duck." In any case, a copy of Johnsgard's important contribution ought to grace the library of anyone—ornithologist and hunter alike—concerned with our continent's bountiful waterfowl resources.—ERIC G. BOLEN.

ORNITHOLOGICAL GAZETTEER OF BOLIVIA. By Raymond A. Paynter, Jr., Melvin A. Traylor, Jr., and Blair Winter. Privately printed, 1975: vi + 80 pp., 1 map, paperbound. $1.75. Order from Bird Dept., Museum of Comparative Zoology, Harvard Univ., Cambridge, Mass. 02138 *or* Bird Division, Field Museum of Natural History, Chicago, Ill. 60605.—Paynter and Traylor, as an adjunct to their respective research on the distribution of Neotropical birds, independently maintained card file gazetteers of "ornithologically significant localities," usually collecting localities but occasionally places where ornithological observations were made but no specimens taken. Winter is a volunteer, working with Traylor at the Field Museum, trying to complete the files for given countries. These authors have pooled their files and produced this modestly priced gazetteer for Bolivia, choosing that country for their first publication venture because it has relatively few places that have been visited by ornithologists.

The authors attempted to include the following items for each locality: "department (similar to a state), geographical coordinates, altitude, collector at that site with the time of his visit (often not inclusive dates), and an indication of the habitat. The last information, unfortunately, has been recorded infrequently by collectors...." Documentation is extensive, and the 108-title bibliography includes most of the literature of Bolivian birds. The sources of information for the gazetteer include localities on specimen labels in the authors' own museums and those found in a literature search. No attempt was made to obtain localities at which birds now in other museums were collected, but which have not been mentioned in the literature. Although understandable, as this project has been necessarily a peripheral effort of the authors, this omission is nonetheless regrettable. There are less than half a dozen museums in the world with major holdings of Bolivian birds. Had a photocopy of the gazetteer typescript been circulated among these museums prior to publication, a closer approach to completeness could have been attained. The authors realize, of course, that their list is incomplete, and add "... surely there are specimens in museum drawers from Bolivian localities that we have yet to hear of." At least for some museums, adding to the authors' list of localities would not have entailed searching through trays of specimens, as museums other than the M.C.Z. and Field Museum have locality files or other helpful documents. Carnegie Museum of Natural History has something over 9000 Bolivian birds. By scanning our catalogues, I found that we have birds from 16 localities not listed by Paynter, Traylor and Winter. In addition, I found (on maps or written itineraries provided by the collector) four of the localities listed as "not located" by the authors, plus five unlisted variations in orthography (the authors have done a great service by indexing incorrect or variant spellings encountered in the literature). In response to the stated request of the authors, I have sent them this supplementary material, but I would have preferred to have done it for incorporation in their original manuscript, although a revised edition or a supplement may be published eventually.

Inclusive dates of a collector's visit to a locality are usually given for areas represented in the authors' own museums. Otherwise, unless a published paper includes an itinerary, the dates given are those that have been encountered in the literature in connection with certain specimens. For example, under San José, Cochabamba, only the date 19 May 1921 is given, with the name of the collector (J. Steinbach) who was there then. From the references supplied, one finds that 19 May 1921 is a miscopying of the date of collection (it should be 29 May) of the type specimen of *Pulsatrix melanota philoscia* Todd. Consulting our catalogue, however, I find that Steinbach was at San José for more than two months (5 May through 10 July 1921). The full dates of itineraries of collectors are often not this easy to determine, but when available they are potentially quite useful to

workers interested in records of seasonal phenomena: occurrence of migrants, molt, breeding, etc.

The points raised above are shortcomings that could be rectified in a second edition of the Bolivian gazetteer, and that should certainly be kept in mind for future publications of this kind. I hope the reception given to the Bolivian volume will be sufficiently enthusiastic to encourage the authors to continue this highly worthwhile project. I urge all curators of collections of Neotropical birds to offer their full cooperation—I don't envy the authors the job of compiling ornithological localities for Brazil!—KENNETH C. PARKES.

BREEDING BIRDS OF NORTH DAKOTA. By Robert E. Stewart. Foreword by Chandler S. Robbins. Tri-College Center for Environmental Studies, North Dakota State University, Fargo, ND 58102, 1975: 295 pp., 18 color paintings, 81 photographs (16 in color), 185 maps. $18.50.—North Dakota, with more federal wildlife refuges than any other state (63), but with no state ornithological society and relatively neglected by ornithologists, has long needed a state bird book. The author of this volume, associated with the Northern Prairie Wildlife Research Center, U. S. Fish and Wildlife Service, Jamestown, ND, has attempted to document available information concerning the past and present status of breeding birds in North Dakota. He has succeeded admirably.

Initial chapters describe the climate, physiography, and geological history of the state. The author then delineates the biogeographical relationships of the state avifauna, listing species typical of the north-central plains region, and then listing additional species that are more typical of major biotic areas to the east, west, and north of the state.

Four major biotic areas are recognized in the state, correlating with four physiogeographic regions, with characteristic species listed for each. Three large state maps delineate physiography, biotic areas, and political subdivisions. Particularly impressive is a large section describing ecological associations of breeding birds, divided into six major associations: agricultural, prairie, wetland, forest, badlands, and towns and cities. Each of these is subdivided by habitat, e.g. the prairie association into tall-grass, eastern and western mixed-grass, short-grass, black sage, and prairie thicket communities. Each habitat type is described with primary, secondary, and extraneous avian species listed, along with characteristic plant species. Sixteen excellent color photographs illustrate most habitats.

Central to the book are the species accounts, describing only those species known to breed in the state, past or present, and arranged phylogenetically by family; orders are not given. Taxonomy follows the AOU checklist (1957), amended by the thirty-second supplement (1973), and incorporates changes proposed by Mayr and Short (1970, Species taxa of North American birds. Publ. Nuttall Ornithol. Club, No. 9). Subspecies generally are not described except for three groups where distinct subspecies can be recognized in the field: the flickers, orioles, and towhees.

Of the 196 breeding species listed (including 190 native), large individual breeding range maps are included for 182 species. Several species are not given maps presumably because breeding in the state is hypothetical, or they are exceedingly common, e.g. House Sparrow and Starling. The maps are well done and include symbols indicating whether nests and/or dependent young, or territorial males and/or pairs were observed, and whether recently (since 1950) or in the past. Thus, the reader can, at a glance, evaluate the records. The description of each species includes breeding range and abundance, habitat with plant species composition, nesting and hatching dates, nest descriptions, and

clutch sizes. Relevant references are cited, especially for rare species. Morphological descriptions, behavior, etc., are not included, and are probably superfluous to the intent of the book. Keys to field identification are not given either; thus birders will also want a good field guide.

The volume is well illustrated with eighteen paintings of nineteen typical prairie species by Walter A. Weber (13), and Roger Tory Peterson (5). Sixty-five excellent black-and-white photographs of birds, appropriately placed throughout the book, were all taken in the state and include date and location. Most of these were taken by Ed Bry, editor of *North Dakota Outdoors*, and well known for his wildlife photography.

Appendices include literature cited with over 350 references, common and scientific names of plants, a large synopsis of publications concerning state birds excellently organized by topic and year, and a bird species index.

Although one can nitpick here and there (Upland Sandpiper is still called a Plover; the table of contents does not give page numbers for families; some references in literature cited are not cited in the body), the volume represents an excellent, lavish, and consistent treatment. It is a definite contribution to the avian literature of North America, and will be of great value to researchers and bird watchers in North Dakota.—L. HENRY KERMOTT.

BEHAVIOR AND ECOLOGY OF THE AMERICAN KESTREL (*Falco sparverius* L.) IN THE SIERRA NEVADA OF CALIFORNIA. By Thomas G. Balgooyen. Univ. of Calif. Publ. Zool. Volume 103. Berkeley, Calif., 1976. 83 pp., 2 plates, 27 figures.—This is a report of field observations of Kestrels in the eastern Sierra Nevada of east-central California in 1970 and 1971. The field data are mainly concerned with nesting chronology, nest-site characteristics, egg measurements, body measurements, growth rates, interspecific aggressive encounters, hunting success, prey, and measurements of the composition and spatial qualities of the plant communities. Included also are accounts of hunting techniques, territoriality, weather effects, and fledging behavior. A major section discusses the significance of sexual dimorphism in Kestrels, and raptors in general.

Balgooyen has mingled extensive discussions with the presentation of his data. This, coupled with frequent, but not always thorough, reference to the literature, tends to create uncertainty in the reader as to what the findings actually were. An incomplete methods section is so brief that interpretation of the data is occasionally difficult and the hope of close comparison with other studies small. For example, it is unclear how individual Kestrels were distinguished in the field, a question central to discussions of home range and behavioral interaction. The population densities of various small animals ranging from flying insects to lizards and birds were estimated from line transects, but the author does not discuss how the densities of these animals were computed from the transect counts.

The paper deals with many familiar aspects of raptor biology. Sexual size dimorphism in raptors remains an intriguing problem. The author argues that males are smaller because the energy costs to the male, in supplying food to the female, are less because males have lower total energy requirements than females. No data are given to support this view and the idea is not easy to rationalize, especially since size dimorphism in Kestrels is small. The hypothesis will no doubt prove difficult to substantiate because it is generally recognized that larger birds transport a unit of body weight over a distance with less energy cost than small birds, and because of variables such as changes in wing loading and other aerodynamic factors while burdened with prey. In any case, a satisfying explanation of the adaptive value of size dimorphism in raptors will need to explain why

males are the smaller sex, why the degree of dimorphism varies so much among species, and why it seems most pronounced among species that take prey that is especially evasive or large in relation to the raptor. Bird-eating raptors and other swift and aggressive species, including Bonelli's Eagle (*Hieraaetus fasciatus*) and Booted Eagle (*H. pennatus*) are strongly dimorphic. Kestrels and other rodent and insect feeders tend to be less dimorphic.

The interpretation of field data is not always careful. "Selection" of east-facing nesting holes cannot be demonstrated unless it can be shown that holes facing other directions are less favored and remain unused. It could well be that the tendency of Kestrels to use east-facing holes is most influenced by the choice Common Flickers (*Colaptes cafer*) make in excavating them in the first place.

The author discusses somewhat minor topics at length. The toothed maxillary tomium in falcons is supposed to make possible a finer and stronger point by providing support at its base. If so, the presence of a notch in the mandible opposing the tooth, remains, unfortunately, a separate problem. The illustration of the beaks of accipiters and falcons does not suggest strongly that accipiter beaks are any less sharp than in falcons. The result that Kestrel hunting success increases markedly as easily-taken insects become more available probably does not merit the considerable space allocated to the topic.

Some statements are not clearly argued. Hovering ability is attributed to small size and low wing-loading of Kestrels, that being small, gain "needed lift." Actually, many larger species, e.g., Rough-legged Hawks (*Buteo lagopus*), hover quite well. That Peregrines (*Falco peregrinus*) do not hover while hunting is attributed to their high wing loading *per se*, and no mention is made of the specialized high speed hunting strategy evolved by Peregrines.

Ethologists will not always find terminology used in the accepted way. The term "search image" is used to describe the momentary appearance of a single prey individual, and not the development of habituation for preying on a type of prey.

The author states that the feet of male and female Kestrels are of similar size because their prey is of similar size. It might just as logically be stated that foot-size is similar because there is no advantage in the sexes taking dissimilar prey. But even this seems a useless approach because the author elsewhere asserts that sexual size dimorphism in raptors is not related to differential prey selection.

Balgooyen has new and interesting information on Kestrel nesting success (87% of eggs laid result in fledged young), and he found a slower attack rate in areas with better cover for prey. Kestrels hunt from perches 97% of the time and hovering and hawking are uncommon.

This publication touches on many aspects of raptor ecology and should prove provocative to its readers who must, nevertheless, remain open on some of the positions taken. Data such as these are gained only by great effort in the field and will provide opportunity for further analysis.—James H. Enderson.

Flamingos. Janet Kear and Nicole Duplaix-Hall (eds.). T. and A. D. Poyser Ltd., Berkhamsted, Great Britain, 1975:246 pp., drawings, paintings, charts, black and white and color photographs. £8.00.—This book is the proceedings of the 1973 International Flamingo Symposium held at the Wildfowl Trust, Slimbridge, England. With an introduction by Peter Scott, chapters by 29 authors, and illustrations of all species and races of flamingos in most of their plumage variations, it is a must for anyone interested in flamingos. One important result of this symposium is the standardization of common

English names (Caribbean, Greater, Chilean, Lesser, Andean, James') of the 6 flamingos. There was also unanimous agreement that the Chilean Flamingo should revert to specific status. The introduction gives a brief summary of our knowledge of the taxonomic relationships of flamingos, some interesting influences flamingos have had on human culture, and comments on conservation problems relating to flamingos.

The first section of the book, "Populations, ecology and the conservation of flamingos," comprises 14 chapters dealing with specific populations and a summary chapter by M. P. Kahl on the distribution and numbers of flamingos. Low-flying aircraft are a serious disturbance to several populations. Environmental change due to industrial development, urbanization, or drainage threatens the very specific habitat of flamingos in many areas. A. R. Johnson reports that the breeding success of Greater Flamingos at the Camargue has slightly surpassed the average for the last 60 years. R. W. McFarlane reports that populations of the three South American flamingos seem to be increasing in recent years, but new roads, increased agricultural developments, and mining may reverse this trend. Other populations have declined. Populations have decreased recently in Sardinia (A. Toschi, Ch. 2), and there was a 42% decline in Iranian populations from the 1971–72 to the 1972–73 census, though an estimated 80–85% of the population occurs on protected lands (D. A. Scott, Ch. 3).

Chapters by A. Sprunt and A. Crego-Bourne, J. E. Cooper, H. H. Berry, H. Poulsen, A. Studer-Thiersch, N. Duplaix-Hall and J. Kear discuss techniques and problems associated with capture, transport, and keeping flamingos in captivity. The chapter "Ritualised Displays" summarizes our knowledge of ritualized behavior of flamingos and attempts to standardize descriptions from previous studies. Most of these displays are illustrated by outstanding black and white photographs. In another chapter A. Studer-Thiersch discusses group display in the genus *Phoenicopterus*. There is considerable overlap in these two chapters on behavior.

T. Clay discusses the taxonomic relationships as suggested by feather lice. The Greater, Caribbean, Chilean, and Lesser flamingos all have the same species of wing louse though each has a separate species of head louse. The James' Flamingo apparently has different wing and head lice species than other *Phoenicopterus*. No taxonomic conclusions are given.

D. L. Fox presents a thorough discussion of carotenoids in pigmentation, including some discussion of birds other than flamingos. His study includes the origin of carotenoids, results of experimental feeding of carotenoids to flamingos, and analysis of carotenoid content of flamingo eggs, crop milk, chicks, and feathers. His chapter ends with a brief evaluation of finely cut grass as a carotene-rich foodstuff for flamingos. Chapters by H. Thommen, J. A. Griswold, and H. Wackernagel contribute additional information on the metabolism of carotenoids and dietary requirements of flamingos.

The final 3 brief chapters by P. N. Humphreys, J. V. Beer and J. Kear, and N. A. Wood describe diseases and injuries of flamingos, but there are few suggestions given for treatment. Appendices provide weights and measurements of flamingos, a longevity table, instructions for pinioning flamingos, and a description of leg bands for flamingos. The bibliography of 303 references will be of great use to researchers.

The editors are to be congratulated for a well-organized and error-free volume. The quality of the photographs, line drawings, and paintings is such that this book could compete well with most "coffee table" bird books as well as being a good review of our knowledge of flamingos. This volume should certainly be ordered by university or zoo libraries.—JEROME A. JACKSON.

THE PLEASURE OF BIRDS: AN AUDUBON TREASURY. Edited by Les Line. J. B. Lippincott Co., Philadelphia and New York, 1975. 191 pp., 28 drawings and 18 color photographs. $14.95.—For this anthology Les Line has assembled a well balanced and carefully edited selection of 25 recent articles, by as many contributors, from *Audubon* magazine. Subject matter varies from a bit of philosophy in Brooks Atkinson's lead article "The Bird Habit," through some well presented lessons in avian biology and conservation by such well known naturalist-writers as Louise de Kiriline Lawrence, Roger Tory Peterson, John K. Terres, and George Laycock. George Plimpton's amusing recounting of his initiation into the world of the Christmas Bird Counts, "*Tsi-lick*! Goes the Henslow's," lends a lighter touch. A lot of good *Audubon* reading is reprinted here, and the book should have a wide appeal even among those who have been long-time subscribers to the magazine. Each selection is headed by a few introductory sentences by Line, along with a painting (or "drawing") by Chuck Ripper. Unfortunately these illustrations appear to have been hastily prepared, and certainly do not represent the artist at his best. Many of the drawings fail somehow to capture the "feeling" of the species, and errors of anatomy, balance, and proportion are all too frequent. Having all of the lead illustrations prepared by a single artist is of course an advantage in bringing the widely varied selections together in a common format, and in providing a sense of unity. In this, Ripper's paintings succeed well enough. To the reviewer, however, any article by George Miksch Sutton (in this case "The Footprint Thieves") not illustrated by Sutton himself is somehow incomplete; and there will be those who will miss Peter Parnell's illustrations in the Angus Cameron selection, "The Power of the Owl." Also included in the book are two portfolios totaling 18 beautifully reproduced full page photographs (by 14 different photographers), including two by G. Ronald Austing and four by Frederick Kent Truslow. As with the articles, these photos have previously appeared in the pages of *Audubon*. The subject matter is decidedly unbalanced in favor of water birds and birds of prey, passerines being represented only by a particularly handsome portrait by Eliot Porter of a Winter Wren at its Maine nest site. Although the photographs are completely unrelated to the text, they do add to the attractiveness and sales appeal of the volume, and presumably to the price. But in final analysis it is the quality and variety of the literary selections themselves, not the illustrations, that are the real measure of a good anthology. For pleasant reading *The Pleasure of Birds* lives up to its name. It is indeed a pleasure.—ROBERT C. LEBERMAN.

Erratum.—Catherine H. Ream's current address should be inserted at the end of her article in the September Wilson Bulletin (88:427–432, 1976). Her address is: 4217 Timberlane, Missoula, MT 59801.