

ORNITHOLOGICAL LITERATURE

THE BEHAVIOR OF SPOTTED ANTBIRDS. By Edwin O. Willis. Ornithological Monographs, No. 10, American Ornithologists' Union, 1972: 6¼ × 10 in., vi + 162 pp., 3 col. pl., 27 text figs., paper cover. \$6.00.

Interspecific flocking by birds within tropical forests takes a number of different forms. Characteristic of tropical forests are the flocks that follow raids of army ants. Other flocks, composed of different species, wander through the forest without obvious association with local concentrations of food. Willis's studies over the last decade and a half have generated most of our current knowledge of the Neotropical ant-following species. In the present monograph he gives us a thorough account, based on a 12-year study on Barro Colorado Island, of a species that joins both kinds of flocks.

This report includes detailed descriptions of the Spotted Antbird's behavior patterns, breeding biology, and foraging techniques and, at the end of each chapter, point by point discussion of selection pressures that might bear on their evolution.

In comparison with the Bicolored Antbird (*Gymnopithys bicolor*) (Willis, Univ. California Publ. Zool., 79:1-132, 1967), the smaller Spotted Antbird (*Hylophylax naevioides*) is more distinctly territorial and more facultative in its ant-following. It forages only about 50 percent of the time in association with army-ant raids. The species also associates regularly, but evidently not commonly, with the small mixed-species flocks that form around White-flanked Antwrens (*Myrmotherula axillaris*) in the middle and lower layers of the forest. The greater sexual dimorphism and the more pronounced territoriality among Spotted Antbirds, in comparison with the Bicolored Antbird, are related to this lesser dependence on ant raids for food.

Territories in this species, much as Willis has described earlier for the Bicolored Antbird (Willis, op. cit.), emerge as areas of dominance. Away from their territories, birds become subordinate in encounters with birds still on their territories. Spotted Antbirds differ from the larger species in directing their aggression primarily toward members of the same sex, a difference related to this species' obvious sexual dichromatism. Unless her mate is nearby, a resident female, even well within her mate's territory, usually cannot dominate an intruding male. Spotted Antbirds, again in comparison with Bicolors, leave their territories less often in order to locate ant raids and more successfully expel intruders. The present report, however, actually makes little advance over Willis' 1967 monograph in quantitative description of a resident's movements or changes in dominance relations across territorial boundaries.

Changes in foraging behavior owing to interspecific aggression in mixed flocks have received Willis's attention earlier (notably *Ecology*, 47:667-672, 1966), and he presents some data along these lines for the Spotted Antbird as well. This species, considerably smaller than either the Bicolored Antbird or the rarer Streak-cheated Antpitta (*Grallaria perspicillata*), is expelled from the prime sites at the head of the column of raiding ants and must accept higher or more remote perches on the average. Especially telling are measurements of the intervals between prey capture attempts. For birds foraging over ant raids in the absence of competing larger birds, the average interval approximates 30 seconds (evidently somewhat shorter over swarms of *Labidus praedator* than over *Eciton burchelli*, although the statistical significance of this difference is not tested). Birds foraging away from ant swarms average about 110 seconds between prey capture attempts. The considerable advantage to foraging over army ants is evidently reduced when competitors are present, but Willis does not present measurements for this crucial

case. Throughout the discussions of foraging behavior I would have liked more thorough evaluations of his sampling techniques.

Those mixed-species flocks not associated with army ants receive extended treatment, although the Spotted Antbird is not a major constituent of these flocks. Willis restricts his discussion to the small flocks of insectivorous birds within the forest, of which he recognizes two types on Barro Colorado Island: those formed around antwrens in the middle levels of the forest; and those formed around greenlets (*Hylophilus*) in the canopy. Willis makes two contributions by systematizing possible selection pressures acting on the flocking habit and by clarifying the involved nomenclature used to classify the roles that different species play in mixed-species flocks. Although no quantitative measurements of behavior were attempted, Willis concludes that other species are attracted to small family groups of White-flanked Antwrens. He proposes that, in other cases as well, conspecific groups might form the basis for interspecific flocks.

The detailed descriptions and itemized discussions often make it difficult to persevere in reading this monograph, and they hinder an integrated view of the antbird's ecology and behavior. The insights are there, however, for those who do persevere.—R. HAVEN WILEY.

THE SWANS. By Peter Scott and The Wildfowl Trust. Michael Joseph, London, 1972: 8¼ × 10¼ in., x + 242 pp., col. frontis. by Scott, many drawings and photos. £4.20. Obtainable from Southern Booksellers and Publishing Co., 35 Woodland Vale Road, St. Leonards-on-Sea, Sussex, Great Britain.

Man's interest in swans is very ancient. It is therefore surprising that very little factual information has been generally available about these conspicuous birds. If an information gap once existed, it does no longer. Peter Scott and a galaxy of specialists have filled the void—admirably—with "The Swans."

Peter Scott infects readers with his own enthusiasm for swans in the very first chapter. Perceptive remarks on every species flow from his rich, worldwide collection of experiences. His account of identifying individual Bewick's Swans from "billprints" is particularly fascinating. The first wild Bewick's Swan visited the Wildfowl Trust sanctuary at Slimbridge, England in the winter of 1948. By the early 1960's about 20 were coming regularly. In 1964 Peter Scott and his associates realized that these birds could be recognized individually by the variations of the yellow and black bill patterns "like finger-prints but much more obvious," which enabled them to identify and name each bird. Wintering Bewick's Swans—and the capability of identifying them—continued to increase rapidly at Slimbridge during the next few years. Sketches and photographs of bill pattern, information on social and family background, and dates of arrival and departure were combined in hundreds of dossiers covering the total wintering population. By 1968–69 only Mary Evans and Peter Scott's daughter, Dafila, could recognize all individuals. By 1970–71, the eighth year of the study, an astonishing 1,315 individuals had been named! Thus it was that the world's only wild swan genealogical research project was built out of exploited opportunity. Durable pair-bonds and long lives make such records especially valuable to students of population structure and behavior.

The rest of the book maintains the high level of reporting set by the introductory chapter. Hugh Boyd provides a lively and informative discussion of nomenclature and classification of the world's eight species of swans. There follows a succinct chapter by M. A. Ogilvie on distribution, numbers, and migration; Ogilvie not only lays broad

foundations for each species, but adds much interesting and important historical information.

Myrfyn Owen and Janet Kear in the third chapter discuss food and feeding habits, bringing out similarities and differences among the species of swans for the first time. Comments and suggestions on keeping swans in captivity, helpful to budding swan-keepers, conclude this broad-brush account.

Twenty-two interrelated topics are treated in Janet Kear's account of reproduction and family life of swans, the longest and most explicit chapter in the book. Comparative information on such topics as pairing, territorial traits, breeding, and cygnets is presented. Genetic charting of sex-linked color inheritance in Mute Swan cygnets is especially interesting, clearing up a point that has long puzzled me.

J. V. Beer and M. A. Ogilvie present a chapter on causes of mortality in swans, explaining that the principal cause of death in some species (in the absence of shooting) is accidents. For example, of 1050 Mute Swans found dead in Britain over a period of years, 65 percent were involved in collisions, two-thirds with overhead wires. One wonders whether or not natural selection will in time tend to eliminate stocks with such poor forward vision and/or capability for reacting.

No book on swans would be complete without a treatise on the role of swans in mythology and art. Mary Evans and Andrew Dawnay provide a poignant review of the meaning of swans to mankind. Viewed against this account of man's appreciation for things spiritual, Dawnay's next chapter on exploitation of swans and G. V. T. Matthews' following account on conservation tarnish man with a somewhat shabby record. One learns, for example, that in spite of their contribution to the cultural life of mankind, swans still suffer from slaughter, accidental killing, denial of food resources, and usurpation of living space. In New Zealand, where Black Swans have been introduced, vast numbers of eggs are collected and used for feeding race horses, of all things. In the United States, Whistling Swans are legally shot each year for sport.

Summaries at the end of the book should be of great interest to specialists. Much technical information of value to waterfowl biologists is neatly capsuled in nine Appendices. A bibliography of 350 titles is of particular worth to readers who wish to pursue specific interests. Lastly, as one has come to expect from Peter Scott and The Wildfowl Trust, the book is delightfully illustrated with over 200 sketches and photographs.

This attractive and informative volume should be in every ornithologist's library, be it for technical or pleasurable reasons. It is a "must" for lovers of waterfowl.—WINSTON BANKO.

PHYSIOLOGY AND BIOCHEMISTRY OF THE DOMESTIC FOWL. Edited by D. J. Bell and B. M. Freeman. Academic Press, New York, 1972: $6\frac{1}{4} \times 9\frac{1}{4}$ in., in three volumes. Vol. 1, xxii + 1-602 pp. + cxlv index, \$33.00. Vol. 2, xxii + 603-1152 pp. + cxlv index, \$33.00. Vol. 3, xiv + 1153-1488 pp. + cxlv index, \$23.50. Many photos, drawings, and charts.

In the first textbook on avian physiology, written by Paul Sturkie in 1953, the author expressed his hope that publication of such a compilation would stimulate investigations on avian species by experimental physiologists, and serve as reference material for ecologists and ornithologists as well. This new work edited by Bell and Freeman attests to the interest in avian physiology and biochemistry that has grown within just one nation, because it is evident from the writings that most of the contributors possess first-hand knowledge of the subject about which they have written.

These three volumes represent the combined efforts of more than fifty scientists within the United Kingdom (with one exception) to bring together existing knowledge on diverse areas of biological features of the domestic fowl. Their findings, arranged in 62 chapters, make an interesting and readable compendium. This project was no easy task in view of the multiplicity of biological journals in which avian biology articles are published.

The domestic fowl is often ignored by ornithologists, being considered an entity unto itself. The physiology and biochemistry of the fowl, however, are not unique among birds, and they provide a fascinating insight into the functioning of nondomesticated species. Investigators of the physiology and biochemistry of the fowl know that the reverse is also true—nondomestic species give insight into the functioning of the fowl—and this fact is reflected in the writings in this book.

Although these volumes are termed physiology and biochemistry, some of the strongest sections, and a considerable portion of most sections, detail the anatomical structure of the gland, organ, or system under consideration. This is to their credit because a strong understanding of anatomy is imperative for comprehending the physiology. Outstanding coverage of anatomy is displayed, for example, in the chapters on the respiratory system by A. S. King and V. Molony, the kidney by W. G. Siller, the cardiovascular system by A. R. Akester, and the lymphoid system by L. N. Payne. Several of these authors have used electronmicrographs to illustrate ultrastructural features; these photographs are printed with excellent clarity.

The three volumes are divided into categories, although not so indicated. Digestion, respiration, excretion, and metabolism together with nonreproductive endocrinology are discussed in Volume 1. Volume 2 covers the cardiovascular system and blood in considerable detail, and to a lesser extent the integument, nervous system, skeleton, special senses, the liver, and thermoregulation. Volume 3 is entirely devoted to male and female reproduction.

The work is intended for students and investigators of ornithology, comparative physiology or anatomy, and nutritional biochemistry. Considerable background and comprehension of these disciplines are required in order to grasp much of the significance of the scientific data that have been selected and presented.

The authors, almost without exception, call on mammalian literature and in some cases lower vertebrate data to support or contrast the present avian knowledge; therefore these chapters embody truly comparative physiology and biochemistry. For example: "In mammals it seems probable that the pineal may affect oestrus, on the other hand, it apparently does not participate in the 'Zeitgeber' for ovulation in the rat, nor is it required for the photocontrol of egg laying in the fowl."

In Volume 1, the authors go beyond the average textbook and cover such subjects as the pineal gland in considerable detail, rather than in the customary two or three lines. The chapter on prostaglandins calls upon the mammalian literature for the most part but includes present knowledge of avian pharmacological actions of these intriguing substances on the central nervous system, cardiovascular system, and smooth muscle of the intestinal tract. The discussion of the ultimobranchial gland, together with calcitonin secretion, is a welcome feature. The chapter by A. H. Sykes on the formation and composition of urine is outstanding.

The second volume adequately covers the integument, skeleton, nervous system, and muscles. The skeleton and muscles are described from histological, biochemical, and physiological aspects rather than comparative nomenclature. The cardiovascular system, together with blood and its constituents, is commendably presented with many references. The chapter on the general aspects of circulation is, perhaps, too general as compared

with the other coverage of the vascular system, where the same information is given with more acceptable avian nomenclature. Extensive coverage (140 pages) is given to blood, its cellular and biochemical components, groups, and coagulation, including immunological and pathological actions. These chapters often point out the differences in biochemical components between whole blood and plasma. Volume Two also has a chapter on special senses, in which vision and hearing are treated adequately, but smell and taste are slighted in details of anatomy and physiology. The treatise on the lymphoid system documents fully yet concisely the anatomical and immunological data on the bursa of Fabricius, thymus, spleen, and other lymphoid tissue. In so doing, the author has performed a considerable task since, as he states, the fowl is often used by immunologists as an experimental animal and model.

Much of the volume on reproduction is devoted to specialized follicular hierarchy and ovulatory and laying cycles which are characteristic of the fowl and vital to its understanding as a domesticated species. Most of the volume, however, will be of interest to ornithologists and other avian biologists. The anatomy of the oviducts, ovaries, and the male reproductive system, and the endocrinology of reproduction and egg biosynthesis possess common features in many avian species.

A few cases of conflicting statements by different authors have slipped past the editors. For example, on page 937 the author states that the half-life of thyroxine in the fowl is 22.5 hours, whereas on page 464 another author indicates the half-life to be 8.3 hours. Errors or contradictions such as this are almost certain to occur, as are a few editorial errors, but they must be seen in perspective as a minor consideration when such a vast amount of technical data is compiled by many authors.

Each volume contains an author index, subject index, and a list of abbreviations for all three volumes. This repetition is of some convenience to readers, but adds 145 pages at the end of each volume. It must be questioned whether or not the entire text could have been combined into two volumes had this procedure been omitted. This, of course, would have eliminated the nice package of all reproduction being in one book. For those teaching courses in reproductive physiology, it is convenient to be able to purchase the third volume alone as a textbook.

This reviewer considers the pooling of previously known facts with pertinent up-to-date information and postulated ideas, together with pointing out areas of research still needing investigation, as constituting an invaluable service. Anyone involved in teaching or research in any aspect of avian biology, whether a veteran or neophyte, should have access to all three of these volumes.—ROBERT K. RINGER.

BORN TO SING. AN INTERPRETATION AND WORLD SURVEY OF BIRD SONG. By Charles Hartshorne. Indiana Univ. Press, Bloomington, Ind., 1973: 6½ × 9½ in., xvi + 304 pp., 10 text figures, 5 pp. of musical scores, and 13 sound spectrograms. \$10.00.

The author's objective in this book is to present evidence (from various features of bird song) bearing on the question of whether or not birds express an aesthetic sense in their songs. Bird song is treated globally, for some 5000 species that might be said to "sing," and the author draws upon his experiences and observations in many parts of the world, on recordings, and on the literature. His primary concern is with "songbirds" (Oscines), but he has something to say about the vocalizations of other birds, as well as insects, frogs, and some mammals (particularly gibbons and whales).

The author points out the following features of bird song that bear upon his basic question: (a) bird songs resemble human music acoustically, (b) there is a correlation between the biological need for singing and the degree of musical skill, (c) there is a great deal of singing by birds, especially by the better singers, when there is no immediate or pressing need for it, (d) birds with highly developed songs sing more of the time, (e) birds tend to limit the monotony of their singing, and (f) birds with elaborate songs are imitative.

Much of the book consists of the presentation of facts (and some conjectures) about bird songs that have a bearing on these points: bird song is compared with human music; criteria are proposed for evaluating or rating the singing ability of a bird; relationships are pointed out between singing skill and the amount of singing to certain features of the bird's biology (habitat, territorialism, feeding habits, mating habits, and the like); data are presented to support the author's concept of the monotony-threshold in bird song; and ratings are given (and discussed) for a great many species and groups of birds.

The author's system for rating singing ability in a bird is admittedly subjective, but he believes it is better than none at all. Values from 1 to 9 are given for each of six parameters of song: (1) loudness (apparently entirely subjective, as there is no suggestion about determining decibel values), (2) scope or complexity, (3) continuity (the relation between song length and the length of the silent interval between songs, but it is not clear just how this relationship is converted to a number from 1 to 9), (4) tone (the musical quality of the sounds in the song), (5) organization (aspects of song pattern), and (6) imitativeness (the ability of the bird to reproduce sounds heard—possibly a measure of the role of learning in song acquisition). These ratings are based on territorial song—not on subsong, whisper song, or other types of song. Individual ratings thus consist of six digits (one for each parameter) and a total; for example, the Short-billed Marsh Wren is given the rating 676.362:30 (p. 237), and the Dickcissel 622.121:14 (p. 238).

Many readers (including this reviewer) will disagree with some of the author's ratings of individual species, and they may be somewhat skeptical of them when they find many species given different ratings in different places in the book (e.g., the Mockingbird is rated 899.767:46 on p. 116, 899.677:46 on p. 192, and 999.668:47 on p. 235; and the Wood Thrush is rated 978.994:46 on p. 116, 978.995:47 on p. 194, and 967.995:45 on p. 235). The families given the highest ratings are the Mimidae, Troglodytidae, and Turdidae. The families given low ratings include the Hirundinidae, Corvidae, Paridae, Certhiidae, Sittidae, Bombycillidae, Vireonidae, and Parulidae; one might argue about some of these, especially the Paridae, Vireonidae, and Parulidae. The ratings given a few North American species may be of interest (two numbers indicate different ratings in different places in the book): Hermit Thrush 47-48, Mockingbird 46-47, Wood Thrush 45-47, Western Meadowlark 45, Carolina Wren 44-46, Bachman's Sparrow 45, Cardinal 43, Tufted Titmouse 31, Yellowthroat 29, Parula Warbler 17, Sharp-tailed Sparrow 13, and Henslow's Sparrow 8.

The text figures are principally musical scores and diagrams of songs (most of them using Saunders' system of notation); some additional musical scores are given in one of the appendices, and a few sonagrams (mostly reproduced in black and white) in another. The author admits (p. xi) a deficiency in knowledge of music, and is apparently (to judge from comments on pp. 78-79) not very enthusiastic about sonagrams; the few sonagrams he shows add little to the book. There is a short glossary, two lists of references (one of books and articles, and one of sound recordings), and three indexes (to birds, persons, and topics).

The author is a Professor of Philosophy at the University of Texas, but has studied

bird song and bird behavior for over fifty years and is a very capable ornithologist. He does not inject too much of his personal philosophy into this book, but one statement (p. 227) suggests some of his philosophy: "It is a stupendous fact about nature that the territorial disputes of thousands of species are something like artistic contests—song duels. The struggle is mainly musical (counter-singing), not pugilistic. If only human beings could do so well."

This is a very interesting book, and of considerable value to professional and amateur ornithologists because of the information on bird song that it contains. The reader may not agree with some of the author's ratings of birds' singing skill, or with some statements in the book—but he will be impressed by the data presented to support the author's contention: that bird song is a type of music, and that birds may express an aesthetic sense in their songs.—DONALD J. BORROR.

SELECTED AMERICAN GAME BIRDS. By David Hagerbaumer and Sam Lehman. The Caxton Printers, Ltd., Caldwell, Idaho, 1972: 11½ × 10¼ in. xiv (unnumbered) + 26 color-plates, each with preliminary pencil sketch. \$30.00.

This elegant collection of colorplates of North American game birds, each accompanied by a page of text, calls to mind an illuminated work from some remote mediaeval monastery, for every word of it—aside from the signature of David A. Maas, whose brief biography of Hagerbaumer appears in the fore part of the book—was hand-lettered by Lehman. The paper is heavy throughout and of a quality needed for good reproduction of the fine watercolor drawings and calligraphic text.

The colorplates are, of course, the book's *raison d'être*. They convincingly stress habitat—notably those depicting the Ruffed Grouse (Plate 1), Common Snipe (Plate 4), Turkey (Plate 19), Clapper Rail (Plate 20), and American Woodcock (Plate 26). Some come close to being landscapes in which bird figures are incidental. Some are strikingly original in concept, especially that of the Mallards (Plate 22) with its boldly handled, dark, grassy hummock and beautifully delineated trees; the two species of goldeneye (Plate 3) hurtling down through a snow flurry; and the Band-tailed Pigeons (Plate 16) flying above "a burned-over ridge, headed perhaps for some mineral spring or favored feeding area."

Without exception, the pictures are well composed. That of White-fronted Geese (Plate 17) evinces close observation on the part of the artist: most of the geese are coasting in on set wings, but the two in the lead have put on the brakes and are flapping down for a landing. The Green-winged Teal picture (Plate 21) disturbs me a little for the branches from which the leaves are blowing seem to be purely decorative rather than part of a tree. In color the plates are satisfying on the whole, only one of them—that of Eastern Mourning Doves (Plate 25)—having background tints of pink, yellow, and blue that do not look quite natural.

The small bird figures are well drawn, but in most of them there is too much detail. Especially is this true of the widespread wings in the California Quail (Plate 10), the lowest and uppermost of the Black Ducks (Plate 24), and the Blue Grouse at the left (Plate 23). In the Wood Ducks (Plate 2) too much pattern shows. A bird artist is forever plagued by a desire to show all of what he knows to be a bird's beauty. He is unwilling to sacrifice any part of this beauty in the interest of keeping his bird moving. He wants every viewer to know that he, the artist, is familiar with a given species'

characters—e.g., the white speculum and rufous lesser coverts of a drake Gadwall's wing or the over-all paleness of a hen Mallard's spread tail—and he forgets that as ducks rush past it is often their shape and behavior, rather than details of color-pattern, that declare which species they are. Hagerbaumer's American Woodcock (Plate 26) suffers badly from over-detail. Carefully inspected, the outermost primaries are not quite as narrow as they should be and the poor bird looks decidedly one-legged. Had it been sketched swiftly in, blurred primaries, short legs and all, the viewer's eye would not have expected, nor looked for, minute detail.

Hagerbaumer's "tricks" fascinate me. Having worked with watercolor since my early teens, I know how he achieved the cloud effect in the upper part of his American Brant picture (Plate 12), but not for the life of me can I say how he "got" the truly exciting *blotchiness* of foliage in the deciduous tree in the foreground of his Blue-winged Teal (Plate 18). The picture looks as if the artist had completely finished the vague background, let that become completely dry—sky, trees, and all—than added the ducks and the tree to the left, daubing the branches with dark brown and spreading these daubs, while still wet, with his fingertips. I am no Sherlock Holmes. I can't find the "incriminating" fingerprints, but something tells me they are there!

The text, which obviously was written for sportsmen, is factual rather than literary. Lehman's hand-lettering is exquisite. The decorative touches at the left of each species account, though sometimes repeated (see Plates 22 and 24), vary enough to look as if they had been hand-colored. Some sentences have been so shortened as to change the intended meaning. Some statements, in themselves correct, follow one another in such a way as to mislead. Thus, under American Widgeon (Plate 11), we find: "A new world duck, they are found throughout the United States. North America is their only breeding place." Readers might surmise from this that *Mareca americana* breeds throughout the United States—and perhaps only in the United States. The "fir" from which the two "heavy-bodied grouse" (Plate 23) have burst must have been outside the picture, for the tree they seem to have left is not a fir but a pine.

For me the least satisfactory species account is that accompanying Plate 9. Here the Blue Goose is called "a color phase" of the Snow Goose and the writeup as a whole makes clear that Lehman has read widely, yet his use of the two scientific names contradicts his statement concerning conspecificity. Advice from a seasoned taxonomist might have helped both author and publisher.

Incidentally, as one who has long been deeply interested in the "blue-snow complex"—and loathe to agree that the two forms may actually be one—I suggest that the common name for *Chen (Anser) caerulescens* from now on be Blue Goose rather than Snow Goose, whether or not the white phase be considered more common or more widespread than the blue. This is partly because the name *caerulescens* connotes blueness and has priority, but it is also because it is unscientific to think of the blue as being a phase of the white when no one can say which phase came first or which will eventually win out. Would it not be interesting—in view of all the argument that has continued, now, literally for decades—if the whites and the blues eventually proved to be separate "species," or if the blues eliminated the whites in the west, leaving only blues there and only the Greater Snow (which has never, so far as known, had a blue phase) in the east? This is not unthinkable. If, as Lehman states, the blues are "steadily increasing in proportion of blues to snows," then perhaps the Lesser Snow Goose of current nomenclature is slowly *becoming* the Blue Goose—i.e., a form blue in color as well as in name.

"Selected American Game Birds" is a handsome, well made book. It will find its way into many a sportsman's library—and heart.—GEORGE MIKSCH SUTTON.

WORDS FOR BIRDS: A LEXICON OF NORTH AMERICAN BIRDS WITH BIOGRAPHICAL NOTES.

By Edward S. Gruson. Quadrangle Books, New York, 1972: 6½ × 9½ in., 305 pp., many bl. and wh. drawings. \$8.95.

The author of this little book, an enthusiastic amateur bird student, has set out to provide for all the birds of North America, including Hawaii, a translation of the scientific name and some sort of explanation of the common name. Brief biographical sketches of the eponyms are given. Something of this sort, competently done, would indeed fill a gap in the ornithological literature. With the decline in instruction in classical languages most amateurs and most professionals are hard put to understand the meanings of the technical names, and the meanings of English bird nouns, such as thrush, are lost in antiquity. The long out-of-print booklet "Introduction to Ornithological Nomenclature" by Mary F. Coble filled a part of this gap, but it dealt mainly with western birds and the nomenclature was out of date. However, the reader should be warned that the present book is not the answer, and indeed I cannot recommend it at all. The author makes passing grades in his Latin and Greek scholarship, but flunks history and knowledge of science in general and ornithology in particular.

The translations of the technical names seem to be pretty well done, although in some cases the scientific name of a bird comes from a derived meaning of a classical word and not its original meaning. Thus *Zosterops* is more likely to have been intended to mean "girdled eye" (a descriptive term) rather than "girdled appearance" given by Gruson.

I am not qualified to judge the derivations of the familial and generic English names, but the etymologies given seem reasonable. I did note one faulty one, however; the "pie" in Magpie clearly refers to the "pied" appearance rather than the call note.

Unfortunately the common names and the biographical sketches are another matter entirely, and the reader should be warned that these are often inaccurate, distorted, or indeed completely misunderstood. In preparing this review I collected a long list of mistakes but will mention only the most glaring here.

The author has little understanding of birds, bird students, ornithology or the development of science in general. In common with many other half-informed persons he seems to feel that the common names (and also the technical names) of birds should form a consistent well-organized system, and they should be useful in aiding the beginning student in identification. Such an idea implies that the people who gave the names should have been both omniscient and prescient in anticipating all discoveries that came after them, or else that the whole system should have been adopted after all knowledge was available. Neither case bears much relation to reality.

Gruson constantly remarks as to whether or not names are accurate or useful (to whom is not clear), but unfortunately he is often mistaken in his judgments. Most ornithologists would agree that the name "Red-tailed Hawk" is often of use in identification, although Gruson says that it is not. On the other hand, who would agree with the author's remarks that the name "Long-billed Marsh Wren" is said to allude to the bill, "which is almost as long as the *rest of the bird*" (italics mine)?

The attitude that nomenclature should represent an elegant and orderly system comes only from lack of knowledge of how the knowledge of birds developed. For example, when Lafresnaye named the Gray-cheeked Thrush *Turdus minimus* it was indeed a small bird for that genus and the name was appropriate for the time. Later transfer to the genus *Catharus*, of course, renders the name inappropriate but Gruson somehow feels that the name is "wrong."

The worst errors and distortions come in the biographical sketches, for while the bare

bones of these are correct, the author belongs to the "New Journalism" school of writing history. One of the characteristics of this style is that historical accuracy comes second to telling an engaging story. Thus the outstanding historical "howler" in the book finds William Gambel (of Gambel's Quail) crossing the western prairies in 1848 in a wagon train guided by Daniel Boone. Poor Dan'l would have been 114 years old at this time. Other inaccuracies (e.g. the fate of the Franklin expedition) are less interesting, but all go to undermine our confidence that the author knows what he is talking about.

Another characteristic of this school of writing is the tendency to encapsulate people into brief, partially correct descriptions, such as Audubon being a "neurotic," Xantus being "a fantast," and several people being "mysterious" (since Gruson failed to find out anything about them). Incidentally, Gruson proposes a new theory of Audubon's ancestry based on his complete misunderstanding of what the word "Creole" means.

Finally, this school of historical writing tends to judge the events and actions of the past by the standards and mores of today. Thus we read such *ex post facto* nonsense as "Montezuma became one of the first leaders of The Third World to be felled by Imperialism," a statement that demonstrates an almost complete lack of understanding of history.

The margins of the pages are illustrated by line cuts from the paintings of Alexander Wilson; these are nowhere identified or acknowledged in the text, although the fact is mentioned on the dust jacket.—GEORGE A. HALL.

WATERFOWL HABITAT TRENDS IN THE ASPEN PARKLAND OF MANITOBA. By William H. Kiel, Jr., Arthur S. Hawkins, and Nolan G. Perret. Canadian Wildlife Service, Report Series No. 18, Ottawa, 1972: 8½ × 11 in., 63 pp., maps, graphs, photos, paperbound. \$1.25. Available from Information Canada, Ottawa, Canada.

An area of 4100 square miles in the aspen parklands of western Canada, known as the Minnedosa pothole region, is considered "the finest unit of waterfowl production in Manitoba and one of the best in Canada." This area had the potential during the period 1949-54 "to contribute at least 1 million ducks to the fall migration annually." Moreover, in the early 1950's "approximately 10 percent of all canvasbacks in North America nested in this district." With the Canvasback presently at an all time low and waterfowl generally short of demand, this publication has special significance.

The report offers an historical-ecological perspective of waterfowl habitat across 200,000 square miles of parkland and prairie in Alberta, Saskatchewan, and Manitoba, though the famous Minnedosa district is the main concern. Natural and man-made changes and their effects on duck habitat, from Indians and buffaloes to grain farmers and raccoons, are discussed along with weather, soils and vegetation. Limited data are given for waterfowl populations, density and trends. The authors were involved in the study area from 1946 "after the depression, drought and war had slowed progress" to 1966, a period including some of the wettest and driest years on record. A picture emerges of an everchanging habitat with wide ranges of variation and a complex relationship to waterfowl use and productivity. Conservation of these small water bodies, which appear to be essential to maintaining present waterfowl populations, is of concern to both U.S. and Canadian waterfowl managers.

According to this report, drainage and filling of potholes are still taking place, along with burning of adjacent upland habitat and clearing of trees and brush on pond margins. "The economy of the Minnedosa region in Manitoba is largely dependent on cereal grain

production. What is a pothole worth to a farmer in comparison to the grain he can produce in its drained basin for the ever-expanding world food market?"

Efforts to preserve wetlands in the whole prairie and parkland region of the Prairie Provinces include a \$50 million 10-year program begun by the Canadian Wildlife Service in 1967. Under this scheme landowners are paid to not drain or fill potholes or to burn marginal vegetation. "The landowners receive an income for allowing their wetlands to be used to produce waterfowl and other wildlife for public benefit." The authors note that this program has since been modified and broadened, but it is not made clear whether this program has been successful. In particular, nothing is said about the effect of the program in the Minnedosa district. One would have liked to have seen more recent information included on this important aspect. A brief statement of U.S. expenditures for wetland acquisition is made (it should be noted that both Kiel and Hawkins are employed in the U.S.).

Ornithologists will be quick to note a few errors in a list of common names in an appendix. Though reference is made to the A.O.U. Check-list, six incorrect or incomplete names appear (e.g., "Baldpate" and "Ringneck"). Although containing 63 numbered pages (including inside covers) the text is limited to approximately 27 pages, the remainder consisting of 35 illustrations, five tables and seven figures. Five full pages of aerial photos, including a colored cover, amply portray the rich and varied landscape of the pothole country.

The large format, lavish use of photographs and open layout characteristic of this series of publications makes this report appealing to the eye, though some may find the uncluttered pages an unnecessary extravagance (see, for example, the review of No. 14 in this series, *Wilson Bull.*, 84:223-224). Another reviewer (No. 12 in this series, *Wilson Bull.*, 84:227-228) applauds the style and design of these Canadian Wildlife Service publications. An exciting presentation that is easy to read is useful and necessary in reaching resource administrators, wildlife managers and lay public. Hopefully, landowners in the Minnedosa district and elsewhere will have opportunity to see this publication. After all, according to the authors: "The future of the parkland and prairie potholes and their wildlife rests ultimately with the landowner. His stewardship of the land and its productive potential will be his legacy to future generations. Coming generations may judge us as much for the natural environment we have preserved as for the bushels of grain we have produced."—ROBERT W. NERO.

THE FOWLES OF HEAUVEN OR HISTORY OF BIRDES. By Edward Topsell. Edited by Thomas P. Harrison and F. David Hoeniger. The University of Texas Press, Austin, 1972: 10¼ × 6¾ in., xxxvi + 332 pp., 61 col. illustrs., 3 facsimiles of original MS. \$15.00.

Until now ornithologists wishing for a first hand view of the state of ornithology in the late sixteenth century could get it only from the great books of that time, such as Conrad Gesner's "Historia Animalium" (ornithology 1555), Pierre Belon's "l'Histoire naturelle des oyseaux" (1555), and the three-volume "Ornithologiae" (1599-1603) of Ulysse Aldrovandi. Required at least have been access to the rare book rooms of some great library and minimal facility with Renaissance Latin or French.

The publication, after nearly 500 years, of Topsell's "The Fowles of Heauen" is accomplished in the present handsomely produced volume and now provides such a view.

Edward Topsell (1572-?1625), an English curate and scribe addicted to natural history lore, is known by "The Historie of Four-footed Beasts" (1607) and "The Historie of

Serpents" (1608), which are chiefly abridged translations from Gesner. His companion work on birds, completed in 1614, has heretofore been known mainly from a brief article on the manuscript in the Huntington Library, San Marino, California (Bayard Christy, *Auk*: 50:275-283, 1933). Topsell prepared the MS for Sir Thomas Egerton, Baron Ellesmere, in the vain hope that he would sponsor its publication.

The Fowles of Heauen is essentially a translation, far from complete (treated are birds from A through C) and somewhat rearranged—this time from Aldrovandi, who in his own turn leaned heavily on Gesner and Belon as well as the classical underpinnings common to all. The illustrations of the MS, the better of which are here much reduced, are handmade, hand-colored copies, more or less rearranged, of the immense crude woodcuts from Aldrovandi. Topsell has added just a bit to his authority, notably fanciful matter on African birds from the obscure Luis de Uretta in a work of 1610, and a few brief comments on some birds from Virginia based on lost drawings of the noted explorer-artist John White (see Christy, *op. cit.*) and other matter.

Besides a careful reproduction of Topsell's unaltered Elizabethan text, minus only a section on domestic fowl, the editors provide a 36-page survey of Renaissance ornithology, perhaps the best to date in comparable compass; extensive literary and ornithological notes—the latter seemingly adequate enough; assorted appendices; and a thorough bibliography of primary and secondary sources. They are not only capable scholars but assess their author well: "Topsell adds little of value to Aldrovandi's volumes on birds. . . . Had The Fowles of Heauen been published, it would have popularized the subject through the pious eyes of the translator but affected the serious study of birds very little."

This volume is addressed, therefore, not to researchers in present-day ornithology but to Renaissance scholars and historians of science and literature. Ornithologists, nevertheless, may be pleased by this convenient opportunity to ponder with Aldrovandi such controversial perplexities as the proper affinities of "the bat," the spontaneous generation of the barnacle goose, and the missing feet of birds of paradise, not to mention enjoying a contemporary sample of opinion on the kinds, proclivities, and uses of birds around 1600.—ROBERT M. MENGEL.

AT THE TURN OF THE TIDE. By Richard Perry. Taplinger Publ. Co., New York, 1972: 5¾ × 8½ in., 256 pp., drawings by Nancy Lou Gahan. \$7.50.

This is an early work by a professional nature writer, in the same vein as well-written natural history articles that have appeared in *The Countryman* and some other British publications. Now it is issued in the U.S.A., having originally appeared in Britain before the end of World War II. The chapters concern birds of coastal wetlands—"saltings"—and other places near the sea. The author was familiar with the then-current ornithological literature and his writing was a product of interaction between such sources and his own experience afield. There is some interesting, but not well documented, material on a nesting female Common Tern (*Sterna hirundo*) mated to a male Roseate (*S. dougallii*) in four years, then to a male Common. An appendix includes a "new theory" of "eclipse" in drakes—in which Perry arrived at the correct explanation ("ancestral" condition) via a mixture of right and wrong reasons; nor was he the first to understand this matter. The illustrations were done without understanding of bird anatomy, especially of feet.—R. S. PALMER.