

ORNITHOLOGICAL LITERATURE

THE COTINGAS. By David Snow, illustrations by Martin Woodcock. Cornell University Press, Ithaca, New York, 1982:203 pp., 21 color plates, 15 figs., 30 maps. \$45.00.—For the first time, comparative information on the biology of all members of the family Cotingidae (sensu lato) is assembled in a single volume. The book commences with a general account of the origin, evolutionary history, natural history, morphology, and classification of the group—no easy task for so heterogeneous a collection of species. There follows a series of species accounts with a separate chapter for each genus. The information is organized under a variety of headings to cover classification, species limits, distribution (with maps and Hafferian scenarios), habitat, food, behavior, breeding and molt cycles, physical features, weight and other measurements, and geographic variation. The section headings are not strictly comparable from one generic account to the next, undoubtedly because the information has been compiled from various published and unpublished accounts and is not itself always comparable; this variability impairs cross reference very little. A useful section on the derivation of the scientific names of the cotingas is included as an appendix. All species are accurately illustrated in full-page color plates by Martin Woodcock, a feature that greatly enhances the book's value as a very convenient reference.

The completeness of the species accounts varies a great deal depending on existing knowledge, and Snow suggests intriguing possibilities for further fieldwork. He remarks, for example, on the incompletely known breeding behavior of the Swallow-tailed Cotinga (*Phibalura flavirostris*). Some unpublished observations suggest that in this species the female may lay a clutch of eggs in each of the two nests, with her mate tending one nest and herself the other. If confirmed this would constitute the only known instance of such a breeding strategy in passerines. A further example of the patchiness of knowledge of cotingid species is the Kinglet Calyptura (*Calyptura cristata*), a bird that apparently has not been seen at all in this century. Some of the more complete comparative accounts include that of the four species of *Procnias*, from Barbara Snow's extensive work, and of the two species of cock-of-the-rock. The latter is enhanced by the contribution, heretofore unpublished, of detailed field observations on the courtship display of the Andean species.

The sequence of genera in this volume differs somewhat from that employed by Snow (1973) and adopted for use in volume 8 of the Peters Checklist. The latter sequence is essentially that of Sclater (1888), based on tarsal scutellation and degree of syndactyly, although some changes have been made on the basis of syringeal morphology (Ames 1971) and distribution, and several genera have been placed in other families subsequent to Sclater's (1888) work. Snow has here incorporated into his classification some of Warter's (1965) conclusions from unpublished work on the cranial osteology of the Tyrannoidea, resulting in slight alteration of the generic sequence from that published in the Peters Checklist in 1979.

As Snow points out clearly, the classification of the subspecies is controversial. It is based on a wide variety of characters, analysed in no particular way and mysteriously acquiring "generic rank" or "familial rank." Rarely has any attempt been made to determine whether these characters are primitive or derived for the group in question. In 1876 Garrod reported that in the cock-of-the-rock (*Rupicola crocea* [= *rupicola*]), the main artery of the thigh is the sciatic (=ischiatric), whereas in the one piprid and seven cotingid genera that he examined the main artery is the femoral. This has since been widely cited and has contributed to the placement of *Rupicola* in its own family in some classifications; in other words the ischiatic artery is used as a "familial character" for the Rupicolidae. Garrod (1876) also pointed out, however, that in all the tyrannids and pittids and the hundred or so oscines he dissected, the ischiatic artery is also the main artery, and Midtgard (1982) has found this to be true as well

in 15 of 16 avian orders examined. The femoral artery is probably a derived condition clustering as a monophyletic group those forms in which it is important, and that in *Rupicola* the ischiatic artery is the main one tells us only that it is not a member of that group. Interestingly, one of the species found by Garrod to possess this modified femoral artery is *Tityra personata* (= *semifasciata*), yet the Peters Checklist places *Tityra* (and *Pachyrhamphus*) as a subfamily of the Tyrannidae because they "have essentially Tyranno-Myiarchine skulls" (Traylor 1977) while differing from all tyrannids in several (derived?) cranial characters. It seems that on the basis of the thigh artery *Tityra* is a cotingid, and on the basis of cranial osteology it is not quite a cotingid and not quite a tyrannid. Snow stresses the heterogeneity of the Cotingidae (s.l.) and the likelihood that the family is not monophyletic; I should think that the inclusion in the Cotingidae of *Tityra* with its femoral artery could only raise the family standards. Although the book is not primarily a systematic study, the classification used determines what species are included, and I am disappointed in the omission from Snow's book of some interesting forms. Clearly, more work is needed to solve such problems with careful phylogenetic character analyses. Snow greatly facilitates and encourages this task by summarizing the available information from his own and others' work, reviewing the literature, and underscoring the gaps in our knowledge of the Cotingidae. His book is an indispensable reference and an important contribution to the ornithological literature.—MARY C. MCKITRICK.

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SONGS OF THE VIREOS AND THEIR ALLIES. By Jon C. Barlow, narrated by J. W. Hardy. Ara Records, 1615 N. W. 14th Ave., Gainesville, Florida 32605, 1981. Two phonodiscs. \$12.00—This album results from the happy collaboration between the eminent authority on vireos (Barlow) and the leading expert on the technology of avian sound recording (Hardy). Known or presumed primary songs of 39 of the 43 species in the family are represented. Of the 68 cuts (a cut is a single sequence of recorded vocalizations of a particular taxon), 42 were obtained by Barlow himself, reflecting his extraordinarily broad geographic and taxonomic familiarity with the Vireonidae. The sequence of subfamilies follows the treatment of E. R. Blake in Peters' Checklist of Birds of the World (R. A. Paynter, Jr., ed., 1968, Vol. XIV:103–138). Within subfamilies, cuts of vocalizations of species and of subspecies are arranged from simple to complex, and according to Barlow's preferred sequence of phylogenetic relationships. This renders simple the vocal comparison of closely-related taxa, a boon to systematists and recreational birders alike.

Barlow's text on the reverse side of the record jacket provides an excellent overview of

the Vireonidae. These liner notes cover distribution, habitat, and general body size but mostly describe the vireo songs themselves in a useful comparative synthesis. For each of the 68 cuts, the scientific and common names of each taxon, date of recording, general locality, and name of recordist are also given on the record jacket. This information is narrated in full by J. W. Hardy prior to each cut on the actual records. The technical aspects of the production reach a high level. Not only are most of the recordings virtually free of background noise but the narration by Hardy is clear and eloquent. The faint buzzing of flies on a few cuts serves to remind those who have labored to obtain high-quality recordings of avian vocalizations in humid places that this goal is seldom reached in comfort.

As Barlow states in the jacket notes, vireos are rarely beautiful singers; instead, the repetitiveness of notes or phrases is their hallmark. Moreover, in the author's words, one is "struck further by both the loudness and persistence [sic] of their song." Listening to all these recordings at a single audition, one is also impressed by the fundamental similarity of the harsh whistles, chirps, slurs, and vibratos sung by many forms. This is especially evident among the numerous members of the genus *Vireo*, where interspecific differences in tempo of delivery of syllables of the same basic quality and form may serve importantly in reproductive isolation. Only the bizarre police-whistle trill of the Blue Mountain Vireo (*Vireo osburni*) of Jamaica stands out from the vocalizations of its congeners, and even this song resembles uncommon trills in the general repertoires of the Yellow-throated Vireo (*V. flavifrons*) and Solitary Vireo (*V. solitarius*).

Barlow properly acknowledges the considerable aid received from some 21 collaborators who either sent tape recordings unrepresented in his large personal collection, assisted in the fieldwork, or helped in the preparation of the first master tapes on which the records were based. A fine pen-and-ink drawing of a Black-capped Vireo (*V. atricapillus*) on a spray of oak, by Nancy Halliday, graces the record jacket.

Overall, this is a high-quality production, prepared with care, class, and competence, and deserving to be widely heard and appreciated. Barlow and his collaborators are to be praised for their fine addition to the small but growing library of avian vocal anthologies.—NED K. JOHNSON.

INSTINCTIVE NAVIGATION OF BIRDS. By Edward C. Gerrard. The Scottish Research Group, Skye, Scotland. 1981:185 pp., numerous maps and drawings. Price not given.—The field of bird navigation has made exceptional advances in the last decades due to the hard work and clear thinking of a few biologists such as Gustav Kramer, Donald R. Griffin, and William T. Keeton. The work of these and other dedicated men and women has accumulated massive banks of experimental and observational evidence about the depth and breadth of the navigational abilities of birds. E. C. Gerrard was stimulated by the reports of this research, and his response was to share his thoughts by presenting them in the form of a privately published book. The book is not strictly about bird navigation; rather, it is a collection of thoughts by someone who is interested in the concepts of bird navigation from a theoretical point of view. Undoubtedly, there is room for careful and objective theoretical analysis of the bird navigation data collected thus far, for the scientific data are extensive. For example, the catalog of summaries of the homing pigeon experiments performed by Keeton's group at Cornell is over 900 pages long, and the test summaries of the past 14 years are now available from the Cornell Laboratory of Ornithology as a computerized data bank on 28 magnetic discs. Surely in these data some new conclusions and concepts remain to be discovered.

Unfortunately, the analysis by Gerrard is neither careful nor objective. It omits key experimental data, and it reports incorrectly the results of experimental and observational

studies. For example, Gerrard states (in Appendix I: Some pigeon homing feats examined) that homing pigeons can return home only from either the north or the south but not from the east or the west, and that homing pigeons cannot return home from unfamiliar territory. He also states (p. 22) “. . . I defy anyone to take large numbers [of pigeons] to release points in all directions and release them 100 miles from home (in overcast or sunny conditions) and get every bird to fly straight home even if they are highly trained. . . .” But pigeons can home from all compass directions, and it has been clearly documented that they can home from unfamiliar territory. Furthermore, these abilities were demonstrated by transporting thousands of homing pigeons in all directions and releasing them (under overcast and sunny skies) from distances of both less than and more than 100 miles. Data from thousands of tests are available, and the results are the opposite of what Gerrard supposes. The results of this careful work are published in readily obtainable scientific journals. But rather than use the scientific literature or the new computer data banks, Gerrard has based many of his criticisms on information from television programs or outdated army reports from the 1940's.

Gerrard has proposed a method of maintaining straight-line flight that does not invoke the sun or star compass. (Most of the mechanisms that constitute his method have been proposed before, although Gerrard does not acknowledge this.) Gerrard does not recognize the complexity of the behavior of migratory birds, and therefore he has formulated an orientation model based on combining two optical cues, with the thought that this might offer a more parsimonious explanation of bird navigation than the sun compass model. His concept is that in the morning birds could use low-angle reflected glare from the surface of water; then at some appropriate time, the birds would switch to a constant sun angle for most of the day; and in the evening they would again revert to low-angle glare as the constant angle (magnetotactic) reference. His model generates a flight path consisting of three looping segments per day, and he believes this path might be misinterpreted as a straight-line sun compass course. Whether all this is more or less complex than ordinary sun compass behavior is a matter of personal opinion; but ultimately, the navigational mechanisms the birds are using are to be found in the birds, not in theoretical models. It is our job to try to find out what the animals are really doing, not to construct a series of rational deductions that contradict the empirical evidence.

The sun compass is one of the most thoroughly studied animal orientation mechanisms; using a sun compass, the animal pursues a constantly changing angle between the straight path of travel and a celestial landmark, such as the sun or a group of stars. Simpler models than the sun compass have been considered by some workers who have suggested that birds or insects fly in daily, semicircular, looping paths by keeping a constant angle between the flight heading and the sun or star pattern, but the predicted looping paths were not observed to occur. Lacking confirmation, the idea has been discarded by most investigators.

Gerrard's theories rely heavily on the use of visible cues near the horizon to explain much of the behavior of migratory birds. Optical orientation to cues near the horizon has been observed and studied before. Orientation to sunset glow, city lights, mountains, clouds, and other landmarks has been tested, and the results show that birds can be influenced by visible features. This influence is particularly evident in the initial escape movements of newly captured, wild, migratory birds when they are released. However, radar and other methods of observing the natural migratory flight paths have consistently shown that simple escape movements, though important, are not sufficient to account for the migratory behavior of birds, which is undeniably complex and sophisticated.

A great deal of freedom is permissible when considering various theoretical models. But when these models are tested against experimental and observational evidence, the evidence must be taken into account, quoted correctly, and examined thoroughly. Gerrard has scored

poorly on all three points. His use of scientific information is so far from the mark that, at times, his book becomes a work of scientific fiction.

I am compelled to mention one other feature of the book, even though it does not directly relate to the validity of Gerrard's ideas. He chooses to use insulting and inciting words, presumably in the hope that it will make his readers pay further attention. Instead, many readers will be annoyed by his lack of respect for the human effort and thought that have contributed to establishing our current state of knowledge. Some examples from subject headings: he refers to the founding father of bird orientation research as "Kramer the instigator"; to the first experimental worker on celestial navigation as "Sauer, the planetarium manipulator"; to the massive efforts by Perdeck to capture starlings (*Sturnus vulgaris*) and displace them laterally during migration as "Perdeck the deporter." The second section of the book is entitled "Bird Navigation—the Sterile Controversy." The advertising brochure implies that previous scientific workers have been wasting taxpayers' dollars. It would be unfortunate if these false and inflammatory accusations should damage the future of a scientific field as productive and as vast as that of animal navigation. The true waste that I see is that Gerrard has failed to read and absorb the massive and exciting literature of bird navigation.

In summary, Gerrard makes some positive suggestions about simple navigation mechanisms; but he makes far more negative and incorrect inferences about past scientific work. On balance, the book does more harm than good.—MELVIN L. KREITHEN.

BIRD MIGRATION IN AFRICA. By Kai Curry-Lindahl. Academic Press, London and New York, 1981, 2 Vols. Vol. 1, xxiii + 444 pp., 255 maps, 7 tables. \$85.00. Vol. 2, xxiii + 251 pp., 8 tables, 32 plates (monochrome habitat photographs). \$45.50.—The first reaction most of us have had to this pair of books is "Are they worth the price?" The answer, unfortunately, is no. One volume costing \$50 would have sufficed rather than two costing a gouging \$130. The maps could have been reduced to three per page and more lines added to the average page. The tables that comprise most of the first volume flaunt wasted space, and the text is rambling and redundant. Most disturbing is the duplication of 65 pages of preface materials and the taxonomic and subject indices in both volumes. The editors seem to have consciously expanded this into an expensive book.

The content per se has some strengths and some weaknesses. Bird migration in Africa is an extraordinary subject, both in its biological dimensions and in the well-developed study of it. Would that we had half as much information on Neotropical migrants. The strengths of this book lie in its coverage of the literature of the 1970's, in the summaries of interesting records of migrant birds on the African continent, and in Curry-Lindahl's extensive experience with African birds. Many of the interesting observations of migrants reported here are from his own field notes. Valuable also are his views of bird conservation problems, his greatest interest and expertise.

Curry-Lindahl's text is similar to Moreau's (1972) *The Palearctic-African Bird Migration Systems*. His discussions, however, lack Moreau's depth and do not cut any new intellectual ground. The book thus suffers in comparison to Moreau's; Moreau set high standards and was able to ask and explore fundamental questions of great dimension.

Bird Migration in Africa does complement Moreau's (1972) work, which was concerned only with land migrants into Africa from Eurasia. This book devotes considerable space (literally) to other external visitors, including vagrant seabirds and, more importantly, to intra-African migrants. It provides a wealth of details that would have fascinated Moreau.

In conclusion, you should not buy this book if you want to learn more about the phenomenon of migration. If you are working with African birds and must find out what is known about Temminck's Stints (*Calidris temminckii*) on their wintering grounds, for example, these volumes will be valuable. But before you commit the funds required, we suggest you look carefully at someone else's copy to decide whether you really need it for your own library.—FRANK B. GILL and A. D. FORBES-WATSON.

A COMPARATIVE STUDY OF THE APPENDICULAR MUSCULATURE OF PENGUINS (AVES: SPHENISCIFORMES). By Donald O. Schreiweis. Smithsonian Contributions to Zoology, No. 341. Smithsonian Institution Press, Washington, D.C., 1982:iii + 42 pp., 19 black-and-white figs. Price not given.—In this important study the forelimb and hindlimb muscles are described in detail from dissections of 28 specimens representing six genera and 14 species of penguins. The musculature is illustrated with careful line drawings of a representative species, *Eudyptes pachyrhynchus*, and both inter- and intraspecific variations are noted in the text. The modification of the forelimbs as flippers for underwater "flight" has had profound effects on the penguin wing. Most of these might once have been termed "degenerative," but are better regarded as functionally significant simplifications. A dozen muscles have been lost entirely (except for occasional vestiges), while others are small and weak. Eight muscles have lost their contractile tissue and are represented merely by tendons. These changes occur mainly distal to the shoulder, with only nine muscles retaining fleshy fibers. All of this is associated with the flattening of the wing, loss of the alula, and suppression of intramembral mobility. There is no patagium as in flying birds, but the propatagialis muscle, which supports that membrane when present, has not been lost; instead its long tendon is attached to the cranial border of the humerus and radius. The pectoral muscles are well developed in association with their propulsive role. The wing elevator, *M. supracoracoideus*, is unusually large relative to the wing depressor, *M. pectoralis*. This is related to the fact that penguins achieve propulsion on both the upstroke and downstroke, rather than on the latter alone as in most forms of aerial flight. More discussion or speculation on the functional adaptations of the forelimb musculature would have been welcome. As might be expected, the hindlimb muscles are less distinctively specialized than those of the forelimb. Penguins are unusual in their upright posture, however, but Schreiweis does not comment on possible functional correlations with this habit.

A numerical analysis was carried out, and along with geographical considerations, was used in constructing a tentative phylogeny of the penguins. As is characteristic of such methods, there is no indication of which characters define the various clusters. The phylogeny is similar to one developed earlier by R. Zusi using osteology, and since a phylogenetic diagram is provided it will serve as a hypothesis amenable to testing against the results of future investigations. This work is an important contribution to our knowledge of avian anatomy, and will also be of interest to students of adaptation and evolution.—ROBERT J. RAIKOW.

THE BIRDWATCHER'S DICTIONARY. By Peter Weaver, drawings by Michael Hodgson. T. & A. D. Poyser, Calton, Staffordshire, England. Distributed in USA by Buteo Books, Vermillion, South Dakota; 1981:155 pp., \$17.50.—This small volume provides terse definitions for more than 1100 words encountered in the birding world. It is heavily slanted toward a British audience (as expected) so many of the terms (e.g., jizz, carr, skerry, roding) are rarely

heard in the United States. For words that have very simple meanings (e.g., iris, outer tail feather, brood) the definitions in this book may be adequate. However, the definitions of words having more complex meanings are often so short as to be uninformative, misleading or even incorrect. Species, for example, is defined as "a population whose members breed among themselves but not (normally) with members of other similarly defined populations." Equating species with population is not the usual definition. A speculum is merely "a patch of color on the wing of a duck contrasting with that of the rest of the wing." No mention is made of the secondaries, so perhaps the blue patch on the Blue-winged Teal would qualify? The standard error (of the mean) is defined as "the difference between an observed mean and the true mean." If this were the case, the standard error (of the mean) could be reported only if the true mean were known, a rather unlikely condition. I could pick on letters other than "s" but my point should be clear. The meanings of many of the words listed in this book have been seriously compromised for the sake of brevity. I could perhaps recommend this book to readers interested in understanding a little of the British birding slang but there are far too many errors, aside from the inaccuracies, in the words with which I am familiar for me to trust even the simple definitions of those words new to me.—D. SCOTT WOOD.

WATERFOWL ECOLOGY AND MANAGEMENT: SELECTED READINGS. Compiled by John T. Ratti, Lester D. Flake, and W. Alan Wentz. The Wildlife Society, Inc., Bethesda, Maryland, 1982:xvi + 1328 pp., 19 black-and-white illustrations by Dean Rocky Barrick. \$20.00.—This volume contains 125 papers which were previously published in 39 sources. The papers are organized under eight major sections: Historical (4 papers), Reproductive Ecology (38 papers), Population Influences and Characteristics (34 papers), Food Habits and Feeding Ecology (10 papers), Management and Economics (17 papers), Movement and Migration (6 papers), Wintering Waterfowl (6 papers), and Evolution, Hybridization, and Speciation (9 papers). Several of the larger sections are divided into subsections, e.g., Population Influences and Characteristics: Hunting, Population Ecology, Sex Ratios, Disease and Environmental Contaminants, Physiology and Energetics. Sections and subsections are followed by "selected bibliographies," most of which contain 25+ references; I suspect that many of these are papers that the compilers wished could also have been reprinted in the book. The apparently uneven coverage of major topics largely reflects the historical emphasis of waterfowl research on certain topics, e.g., breeding ecology and food habits, and the lack of research on other topics, e.g., winter ecology. The book is up to date; several of the papers were published since 1980. Although some of the "old" classics are there, e.g., Hochbaum's (1946) "Recovery potentials in North American waterfowl," 70% of the papers were published since 1970.

Ratti, Flake, and Wentz state, in the Preface, that "Our primary objective was to compile a comprehensive group of readings suitable as an academic textbook and as a professional reference book." I think that they have succeeded admirably in that objective as the book certainly contains many of the significant papers on waterfowl. Ted Bookhout says in the Foreword, "If six other groups of three compilers drew up their lists of what ought to be included in a book of this type, one could predict six different lists." But, I expect that any papers on those lists, which are not reprinted in this volume, are listed in the "selected bibliographies." For example, my list would have contained John Ryder's (Wilson Bull. 82: 5-13, 1970) paper on the evolution of clutch-size in geese; it is not reprinted in the book, but, sure enough, it is in the bibliography following the section on Evolution, Hybridization, and Speciation. Furthermore, because all the reprinted papers have their original Literature Cited sections, it is likely that any pre-1980 publication about North American waterfowl is

mentioned somewhere in the book. Yes, the book has been, with a few exceptions, restricted to papers about waterfowl research in Canada and the United States. The compilers did this "to restrict the overall length of the book." I suspect that Hugh Boyd, for one, will consider this a serious deficiency, but . . . a 2656 page book?!—DAVE ANKNEY.

DIE VOGELARTEN DER ERDE: EIN SYSTEMATISCHE LISTE MIT VERBREITUNGSANGABEN SOWIE DEUTSCHEN UND ENGLISCHEN NAMEN. By Hans E. Wolters. Paul Parey Scientific Publishers, New York, New York, 1982:xx + 745 pp. \$210.00.—As the title states, this is a list of the bird species of the world, together with their geographic distributions, and their German and English common names. The indented table of contents sets out Wolters' higher-level classification, which differs in many ways from those familiar to most American readers. It is much more highly "split" at every level; such families as the Pteroclididae, Phoenicopteridae, Musophagidae, and Opisthocomidae, to name a few, have orders to themselves, so the classification has many more orders than usually expected. The same thing is true at the familial and generic levels, e.g., five genera of pittas are recognized instead of the more usual single genus. Wolters advocates cladistic classification and provides a dichotomously branching dendrogram showing hypothetical phylogenetic relationships among his 50 orders. Because there is no character list, however, the basis for this arrangement is not provided.

It is not always easy to find the group that you want. The table of contents goes down to subfamily, but to use it quickly you must be familiar with Wolters' classification, which as noted above, differs greatly from most others. In addition, however, there are alphabetical indexes to scientific names (generic and specific), and to German and English common names.

The bulk of the book consists of the species lists. For each species there is a scientific name (including author and date), German and English common names, and geographic distribution. The latter is in German only, but most of the names are similar to English spelling so those who do not read German should have little trouble with most of them. Subspecies are listed, but separate distributions are not given for them, only the overall distribution of the species. The Peters Checklist is still necessary for details of occurrence.

No, the price of this book is not misprinted above, it really does sell for two hundred ten dollars. There is nothing in its physical nature to give it a retail value more than one-fourth the list price even by current inflated standards. Neither the undoubtedly great efforts of the author nor the limited sales potential can justify a price that makes the book virtually unpurchasable by private individuals. The advertising brochure admits that people cannot afford this book and suggests that you ask your library to buy it. I suggest the opposite. There are other works that cover similar ground at a fraction of the price, and even if there were not, few institutions could withstand many such attacks on their budget. Let us hope that the present case is a publisher's miscalculation; if it is an omen of future trends then technical books as we know them are on the verge of extinction.—ROBERT J. RAIKOW.