

## REVIEWS

EDITED BY WALTER BOCK

**Feeding and the Feeding Apparatus in Waders.**—P. J. K. Burton. 1974. London, British Museum (Natural History). Pp. xiii + 150. £ 3.50.—The goal of this monograph, the author's Ph.D. thesis, is to analyze the feeding apparatus in the waders, with emphasis on five representative British species, the Golden Plover, Redshank, Curlew, Dunlin, and Common Snipe. Films of feeding actions were analyzed, stomach contents studied and the skeleto-muscular system of the jaws, tongue and neck described. The morphological descriptions are thorough, well presented and illustrated. Most interesting are the sections on function (e.g. muscle action) and the final comparison of the representative species (pp. 126–131). Herein Burton correlates the information on food and feeding methods with the functional and descriptive morphology. Burton struggles with the central problem facing all students of evolutionary morphology today, namely how to obtain sufficiently detailed and quantitative information on functional observations and on morphological-ecological interactions, both of which are essential for any adaptive conclusions. Careful analysis of his functional-adaptive conclusions will show that most could be reached without an extensive morphological investigation. The problem is not unique to Burton's study but one common to the entire field of functional morphology. The morphological details provided by Burton and the correlations shown will help greatly to develop methods for advancing evolutionary morphology.

The systematic review (pp. 131–138) supports, in general, the earlier findings of Yudin. Burton supports placing *Peltohyas* in the Charadriidae (s.s.), but he cannot argue for or against Yudin's suggestions that *Pluvianus* may not be a member of the Charadriiformes, or that the Burhinidae are allied to the Otididae of the Gruiformes.

Two technical factors of composition are quite annoying, namely the arbitrary setting of some paragraphs in small print and the greatly uneven right margin. Hopefully these practices will be abandoned in future publications.

Dr. Burton's paper is required reading for all ornithologists interested in avian anatomy and in the Charadriiformes. Hopefully he will continue comparative-functional morphological investigations of this order.—WALTER J. BOCK.

**The owls of North America.**—K. E. Karalus and A. W. Eckert. 1974. Garden City, N.Y., Doubleday. 278 pp., 53 plates, many text drawings and maps. \$29.95 (\$50.00 special collector's edition). **The book of owls.**—L. W. Walker. 1974. New York, Alfred A. Knopf. 255 pp., numerous photographs. \$12.50. **Owls of the world.**—J. A. Burton (Ed.). 1973. New York, E. P. Dutton. 216 pp., numerous illustrations. \$19.95. **Owls.**—T. Angell. 1974. Seattle, Univ. of Washington Press. 80 pp., numerous drawings. \$12.95. **Eulen.**—S. Eck and H. Busse. 1973. Neue Brehm-Bücherei 469, A. Ziemsen Verlag, Wittenberg Lutherstadt. 196 pp. DM 18.20.—The year of the owl has come and gone, and we are left with a series of books, none of which provides a good summary of the biology and diversity of owls. The best of the group are the books by Eck and Busse, and by Burton. "Eulen" has two main parts, the greatest ( $\frac{3}{4}$  of the book) is a systematic account of each species and the rest is a general section, most of which is a discussion of owl conservation and maintaining and breeding owls in zoos. Some life history material is given in each species

account. It is the only book of the group with proper citations and a good bibliography. The Burton book is also divided into a general section and a systematic section wherein the owls are described by groups; a check-list based on Peters' (1940) "Birds of the world" is included. Each chapter is written by a separate author. The text is well written, attractively illustrated, but lacks citations and is therefore of limited usefulness to any serious ornithologist. Many of the authors are unknown to me and it is difficult to judge the caliber of their contributions. Both books have good aspects, but neither can be recommended.

The remaining three books should never have been published. As far as I can tell, the excuse for publication of each was the existence of a set of drawings or photographs about which a text could be written. The photographs in Walker's book are excellent—some are remarkable—and are worthy of a good text. The drawings in Angell's book are stylized, interesting in a way, but are poor as illustrations as is the text. Publication of this book by a university press is a discredit to the standards of excellence established by the university presses. Equally disgraceful is the Karalus and Eckert book which is published by one of the major natural history publishers in the country. This volume is a clear case of having a set of owl paintings for which a text was commissioned. The author is unknown to me as an ornithologist; none of the information is supported by citations and his ignorance is nicely demonstrated by the range maps of subspecies, many of which are shown as broadly sympatric.

Occasionally an artist produces an excellent set of drawings for which a text is needed, but no excuse exists for the treatment provided by the Angell, Walker, and Karalus and Eckert volumes. One need only turn to "Birds of the world" by Austin and Singer for a successful collaboration of the type mentioned. Moreover, it is time to speak out against "coffee-table" books that make little or no contribution to the ornithological literature. Unfortunately major ornithological libraries are forced to obtain these volumes to keep their holdings complete, which reduces their already limited acquisition funds. The only defense against books such as in this owl series is for ornithologists to insist that their institution libraries not purchase them and to make their feelings known to the publishers.—WALTER J. BOCK.

**Annual review of ecology and systematics.**—R. F. Johnston (Ed.). 1975. Palo Alto, Calif., Ann. Rev. Inc., vol. 6, ix + 422 pp. \$17.00.—Although this volume contains only one paper dealing directly with birds—an excellent review by Klaus Immelmann on "Ecological significance of imprinting and early learning," it contains a number of papers of general importance to studies of avian ecology, distribution, and systematics. These include a paper on "Late quaternary climatic change in Africa," one on "Structure and climate in tropical rain forests," on "Experimental studies of the niche," and on "Simulation models of ecosystems." A paper by Guy Bush on "Modes of animal speciation" summarizes the literature on mechanisms of speciation from allopatric to sympatric. Although he discusses in detail the nature and operation of external barriers separating sympatric populations still capable of interbreeding (largely host specific insect and other invertebrate parasites), he does not present any careful field observations or experiments (other than the Thoday disruption selection study) that demonstrates the actual levels of gene flow between these sympatric populations. Current ideas of sympatric speciation require careful testing by empirical observation, not further theorizing. The entire volume is recommended to all ornithologists interested in systematics, ecology and evolution.—WALTER J. BOCK.

**Urvögel, Archaeopterygiformes.**—B. Stephan. 1974. Neue Brehm-Bücherei, No. 465, A. Ziemsen Verlag, Wittenberg Lutherstadt. 167 pp. DM 13.90. **Das fünfte Skelettexemplar von Archaeopteryx.**—P. Wellnhofer. 1974. Palaeontographica, Abt. A, vol. 147, pp. 169–216.—Stephan's volume on primitive birds is in the tradition of the Brehm-Bücherei, being a thorough, detailed review of the literature on *Archaeopteryx*; it contains little, if any, original research by the author. Almost all illustrations are from Heilmann, de Beer, and other well known treatises on *Archaeopteryx*. However, it does provide a modern review, includes a complete bibliography and reproduces illustrations from a widely scattered literature. The only important papers not included in the bibliography are the recent studies by Ostrum and by Regel that appeared too late, and the paper by Wellnhofer. Reproduction of illustrations is only fair; many are too dark or fuzzy. Several photographs of the counterslab of the Berlin specimen are included; these have not been previously published, at least to my knowledge. "Urvögel" is of special value for ornithologists who do not have the classic works of Heilmann, de Beer, and others.

Wellnhofer describes the most recently discovered specimen of *Archaeopteryx* recently found north of Eichstätt, Bavaria; the specimen is deposited in the museum at Eichstätt. The fifth specimen appears to be the best preserved one of the five skeletons known to date. Most important is that the skull and the pelvis are well preserved. Wellnhofer has been able to reconstruct the skull in detail; it differs somewhat in the structure of the braincase from the reconstruction based on the Berlin specimen. He concludes that the skull is kinetic. The pelvis shows that the pubis is reversed, but that the ilium and ischium are not expanded and fused with one another and with the pubis posteriorly. Wellnhofer compares the new find with descriptions of the four known specimens. He concludes that the skeletal morphology of the Eichstätt specimen supports Ostrum's view that birds evolved from the theropod saurischians.—WALTER J. BOCK.

**The life of birds.**—Jean Dorst. 1974. New York, Columbia University Press (Translated by I. C. J. Galbraith). 2 vols. 718 pp. \$35.00—Jean Dorst, president of the 16th International Ornithological Congress, presents a biology of birds from an ecological viewpoint, but without ignoring topics such as morphology, physiology, and classification. At least three-quarters of these volumes are devoted to chapters on ecology, migration, behavior, reproduction, and conservation. The material is clearly presented in a pleasant style that makes for enjoyable reading. Information content and accuracy is high when judged against the goal of this work. Each chapter has a brief bibliography that is adequate as an introduction to the literature, but does not pretend to be complete. I found most interesting the 11 chapters discussing adaptations of birds to major habitats, e.g. the sea, the polar environment, deserts, and the place of birds in the living world. Herein, Dorst summarizes our knowledge of avian biology in a way that is difficult to find elsewhere and that clarifies avian adaptations better than the usual approaches of individual functional systems or of taxonomic groups. Avian conservation and relationships between birds and man are treated in three short chapters.

Dorst's "The life of birds" is not a substitute for "Avian biology," nor does it serve adequately as an ornithological textbook. However, I believe it fills an important niche in the ornithological literature. It is an excellent introduction to avian biology for the amateur ornithologist and layman interested in natural history. The topics covered and their treatment make, in my opinion, this treatment of birds and their adaptations fascinating for anyone interested in birds.—WALTER J. BOCK.

**American Bird Engravings.**—Alexander Wilson. 1975. New York, Dover Publ. xix + 103 plates. \$5.00.—All 103 plates from "American Ornithology" are reprinted (8 in full color) with an introduction by Dean Amadon. Seventy-six of the plates are from Alexander Wilson's "American Ornithology" (9 volumes, 1808–1814) and the remaining 27 are from Bonaparte's four volume (1825–33) book of the same title. Of interest is that Wilson became interested in natural history at the age of 36 in 1802, the first volume of his "American Ornithology" appeared in 1808, and he died at the age of 47 in 1813, having completed all the work for volume 8 and the drawings for volume 9; thus the work of the Father of American Ornithology spanned only a decade and was done under the great difficulties.

The plates are excellently reprinted on a large format (9¾ × 12¼") with a cross-referenced index of current and obsolete nomenclature; it would be an excellent addition to the library of all ornithologists.—WALTER J. BOCK.

**American wildlife painting.**—Martina R. Norelli. 1975. New York, Watson-Guptill Publications. Pp. 224, 65 color plates and many black-and-white plates by the artists—naturalists John White, Mark Catesby, Alexander Wilson, John James Audubon, Martin J. Heade, Abbott H. and Gerald Thayer, and Louis Agassiz Fuertes. Acknowledgments, introduction, and main text are followed by a comparatively short selected bibliography, a list of picture credits, and an index. \$25.00.—No book with these illustrators could help but be beautiful. Even with colors distorted the superb delicate drawings shine forth. As far as I can judge from my copy, the plates are run-of-the-mill reproduction. Some of them—Catesby, Wilson, and Audubon—seem brighter than the originals I have seen. It is a pity that the flamingo on the jacket changed its shade in the text and neither of them really matches the original.

I have before me Gerald Thayer's book "Concealing coloration in the animal kingdom." The only plate in Ms Norelli's book that comes close to matching these originals is "Peacock in the woods" and in that the bare white cheek patches have become yellow. The "Blue Jays in winter" have faded and the trees in the background grown darker—the colors of caterpillars and leaves are all changed and the Thayers would recognize their own work only by line. The natural camouflage they showed so efficiently is lost.

The pictures done by Martin Johnson Heade do not belong in this assembly at all. Heade was first and foremost a landscape painter, secondly a portrait painter. That he developed a dilettante's interest in hummingbirds late in life while in Brazil does not make him a bird or wildlife artist. His hummingbirds are stiff and motionless and seem to have scales instead of feathers. I cannot compare them with the originals, but I can say that as shown in this book the colors are not accurate. Nevertheless the author could have identified and named them with the assistance of one of the curators at the nearest museum. If Ms Norelli wanted to add another wildlife artist to her classic list within the criteria she used, she might have chosen from any number such as R. Bruce Horsfall (1879–1948), superb bird artist, illustrator of many Audubon Society books, and Chapman's first choice to paint habitat group backgrounds for the American Museum of Natural History before Fuertes came on the scene. She might have chosen Jacques (1888–1969), whose wonderful bird pictures are world famous, or Allen Brooks (1869–1946), who completed the plates for "Birds of Massachusetts" after Fuertes' untimely death and illustrated many other books.

Louis Agassiz Fuertes' biography is more lively than the others but gives no hint of the puckish sense of humor with which he and Frank Chapman entertained themselves and each other. The stories about them are legion and some of the older ornithologists could have added a great deal to Ms Norelli's references. The Fuertes

color plates are fairly well reproduced, but it astounds me to see the author's choice of which of his pictures to reproduce, when hundreds of fine unpublished ones are available at the American Museum of Natural History and a remarkable set hang in the board room of the Laboratory of Ornithology at Cornell University.

On the whole, this book is beautiful for line drawing and dramatic poses of birds, but with a little more effort and accuracy, it could have been magnificent. It is not a good book. The author abuses the English language. Her writing is full of gross crudities. Split infinitives abound and that awkward conjunctival "due to" is prominent. Ms Norelli likes to distort nouns into verbs and often their original meaning escapes her. Her short biographies of the artists are neither colorful nor completely accurate. The book was quite evidently aimed at the coffee table trade, but I think only the cocktail table trade could look at it or read it through their rose-tinted glasses.—ELIZABETH S. AUSTIN.

**Salt glands in birds and reptiles.**—M. Peaker and J. L. Linzell. 1975. Monogr. Physiol. Soc., No. 32, Cambridge, Cambridge Univ. Press. Pp. x + 307. \$27.50.—The salt secreting function of avian nasal glands was discovered by Kurt Schmidt-Nielsen and his associates in 1957. A half page was devoted to this subject in volume 1 of "Biology and comparative physiology of birds" (1960) and 15 pages in volume 2 of "Avian biology" (1972). The present book is a thorough monograph of the morphology, physiology, biochemistry, control, and ecology of this most important adaptation to the water-salt environment of birds; only 30 pages of the volume are devoted to salt glands in reptiles. Most of the work on salt secretion in avian nasal glands has been published outside the standard ornithological literature; hence this book includes a wealth of material largely unknown to ornithologists.

Salt secretion in avian nasal glands has been the object of intense research for the past two decades; 266 papers were published during the last decade. Impressive is the work on neural and hormonal control of salt secretion and on the existence and location of osmoreceptors. Ingenious experiments by the authors demonstrated that osmoreceptors exist independent of the nasal glands, that they are not located in the head, and that the vagus nerves carry the impulses from the receptors to the CNS. The discussion of water movement across the secretory epithelium starts with a mechanism advocated by J. M. Diamond, who is known to ornithologists mainly for his work on communities and distribution of birds. Structure of microcirculation along the tubules suggests that a countercurrent mechanism serves to concentrate salts, but the structure is not that of a hairpin multiplier type as found in the nephrons of the kidney. A chapter on "Adaptation of the gland" deals with physiological adaptation (the ability of a structure to changes in the environment during the life of an individual), not with evolutionary adaptation. A good analysis of comparative physiology and of ecological correlation is included. The section on integration between the salt gland and other organs—that is, the complete picture of osmotic balance in birds—is weak, as noted by the authors, and is a field they hope to investigate in the future. The only other weakness is the chapter on adaptive evolution of the nasal glands in reptiles and birds, whether avian salt secreting nasal glands were inherited from reptiles or arose in birds, and whether they originated in terrestrial groups and were preadapted for marine life.

A short, but nice section on "Applied physiology" covers problems of maintaining marine birds in captivity and of the care of oiled sea birds. Little attention has been given to proper salt balance and the authors argue that practical physiological studies be undertaken to fill gaps in our knowledge. They argue that the large sums

spent cleaning oiled sea birds are wasted if the birds die shortly after release to the sea because of (physiological) adaptive modifications in the nasal glands to conditions of fresh water during treatment.

My only objection is to the price of this small volume which is high for a book published by a university press. Price aside, "Salt glands in birds and reptiles" is an outstanding example of a broad, unified analysis of a major avian adaptation and should be in all ornithological libraries.—WALTER J. BOCK.

**Handbuch der Vögel Mitteleuropas. Band 6, Charadriiformes (I. Teil).**—U. N. Glutz von Blotzheim, K. M. Bauer, and E. Bezzel. 1975. Weisbaden, Akad. Verlagsgesell. 840 pp. DM 185 separately (subscription price, DM 158).—The latest volume of this series (see review by Bock, 1968, *Auk* 85: 522–524, for details on the *Handbuch*) deals with 33 species comprising part of the waders. The species accounts average 25 pages, with several of 50–60 pages; the format and emphasis in each account follows that established in earlier volumes. Many of the accounts are written completely or in part by invited authors, but uniformity has been assured by careful editing. The authors do not provide the authorities for the classification followed. I see no advantage in maintaining the many genera of lapwings and simultaneously placing all of the stints in *Calidris*. The price of the volume is high, but so is the quality of its contents. This handbook series can still be obtained at the subscription price.—WALTER J. BOCK.

**The biology of penguins.**—B. Stonehouse (Ed.). 1975. Baltimore, University Park Press. Pp. ix + 555. \$29.50.—This volume consists of 21 contributions to the biology of penguins, one of the most specialized groups of birds. An introduction to the Spheniscidae is provided by Stonehouse, but no information is given on the rationale behind the organization of this collective volume (it is not based on a symposium) other than reviewing much of the recent work on this family. The volume contains 2 chapters on evolution and taxonomy, 5 on anatomy and physiology, 3 on temperate and subpolar forms, 6 on Antarctic species, 2 on predation and mortality, and 2 on communication and display of the Adelie Penguin (4 in all on this species). Most of the volume deals with reproduction, behavior, and ecology of penguins, which are well treated. Many of the anatomical and physiological adaptations to the extreme cold environment inhabited by penguins are not covered, nor are the studies on orientation by Penny and others analyzed. One comment on organization can be offered for this and similar volumes; quite a bit of space could be saved by having a single bibliography. This volume provides an excellent introduction to the biology and literature of this fascinating group of birds, and should be perused by all serious ornithologists.—WALTER J. BOCK.

**The Birds of New Jersey. Their Habits and Habitats.**—Charles Leck. 1975. New Brunswick, Rutgers University Press. Pp. xviii + 190. \$12.50.—This small book uses a novel approach for a state bird book—that of discussing the avifauna by avian communities rather than by the more traditional species account. New Jersey is an excellent state to try this approach because of its relatively few and well defined habitats. Unfortunately, this book is only partly successful in achieving this goal. The habitats and their avifaunas are described too vaguely and in a overly wordy style. The maps showing the distribution of habitats are not sufficiently detailed. Most of the major habitats are included with the possible exceptions of

the large fresh water marshes found in northern New Jersey between the long parallel north-south ridges and of the once luxuriant Hackensack Meadows. Absent also is a discussion of the spectacular fall migration at Cape May Point, the heron colony at Stone Harbor and other notable areas that deserve mention even in a volume organized by avifaunas. Much space is taken by anecdotal material, accounts of Christmas and Big Bird Day Counts, and photographs of common birds. Although unsuccessful in this book, I believe that the concept of organizing state bird books by major avian communities is excellent and hope that it is attempted in other states.—WALTER J. BOCK.

## ALSO RECEIVED

**Swan watch.**—Bud Schulberg. 1975. New York, Delecorte Press. 149 pp., illus., with many fine photographs in black-and-white and color by Geraldine Brooks (Mrs. Schulberg). Cloth. \$8.95.—This is a wonderfully written tale of some years in the lives of the Schulbergs and a pair of once wild mute swans. As the swans became tamer the Schulbergs became more involved with them, finally chronicling the daily events in their lives until tragedy in the form of a pair of Great Black-backed Gulls broke the idyll of all their lives. It is a fine presentation of swan life history.—ELIZABETH S. AUSTIN.

**Watching sea birds.**—Richard Perry. 1975. New York, Taplinger Publ. Co. Pp. vii + 230, 12 black and white by R. A. Richardson + 2 maps. \$10.95.—This publisher has brought so many bad foreign bird books to this country that is a relief to find him introducing one that is worthwhile and pleasant reading. The book is evenly divided between a report of birds, puffins, kittiwakes, Razorbills, murres, and guillemots breeding on the island of Lundy west of Devon in the Atlantic Ocean and of Great Skuas, Arctic Skuas (Parasitic Jaegers), and Gannets and Northern Guillemots (murres), on the Isle of Noss off the east coast of Scotland. The author is apparently a careful observer and very sure of himself as he does not back up statements with any references to literature and includes no index. The last half of the book will bring a feeling of nostalgia to those Americans who on their way to attend the international congress in Oxford went on the "Devonia" cruise to the bird islands circum-Scotland. They can relive parts of that trip reading Mr. Perry's descriptions of Noss and its denizens.—ELIZABETH S. AUSTIN.