REVIEWS

EDITED BY JOHN WILLIAM HARDY

The Coturnix Quail/anatomy and histology.—Theodore C. Fitzgerald. 1970. Ames, Iowa State Univ. Press. Pp. xix + 306, many text figures. $7.95.—During the past several decades, the Coturnix or Japanese Quail (*Coturnix coturnix japonica*) has become a valuable experimental animal in many fields of avian biology (see bibliographies in the "Quail Quarterly"). Much of this research is physiological for which many workers require some background morphological information. Realizing the need for a descriptive anatomy of *Coturnix*, a group of workers at Auburn University, long a center for *Coturnix* studies, asked Professor Fitzgerald and his associates in the Department of Anatomy and Histology, School of Veterinary Medicine, to undertake such a project. Unfortunately Professor Fitzgerald died before it was completed, and members of his staff finished the project and published the monograph. As a result, it is not clear what part Professor Fitzgerald had in the research incorporated in this book and who was responsible for many important decisions. According to the Preface, veterinary students made the dissections and art students prepared the first drawings. Mrs. J. Guenther was responsible for final work on the illustrations and the manuscript, and for seeing the book through publication. But no information is given on responsibility for checking dissections, identification of structures, terminology, and writing the manuscript. Moreover, Professor Fitzgerald and his associates (mentioned in the Preface) are not known to me as avian anatomists, and are not the senior authors of any published papers cited in the bibliography; I presume that they are mammalian anatomists because of certain terminology used. Further, it seems reasonable to conclude that this project was undertaken by Fitzgerald's group as a favor to their colleagues at Auburn University, and that it was not related to any other research projects in their department. Lastly this study had to be completed without the guidance of the original project director, which always results in increased publication difficulties.

Designed to provide nonmorphologists with information on the gross and histological anatomy of this species, "The Coturnix Quail" is basically a service book. In this review, I am concerned primarily with the book's success in achieving its stated goals as a source book for nonanatomists.

After several careful readings of the entire text and a close study of the chapters on osteology, arthrology (joints and ligaments), myology, neurology, and the integument, I can only conclude that this monograph fails to attain its stated objectives. By failing to achieve its goal, I mean specifically that if a nonspecialist has a question about the morphology of *Coturnix*, his chances of obtaining a correct answer from this book are poor. I tested the book with a number of questions related to various aspects of morphology with poor results.

The morphological descriptions are, in general, vague, incomplete, and often wrong, and many figures are crude and misleading. Factual errors in description are abundant; I shall mention only a few. The same structure is shown as the frontomandibular ligament (Fig. 2.2) and as the nonexistent "supraorbitomandibularis muscle" (Fig. 4.6). The M. depressor mandibulae is described as the M. occipitomandibularis (Fig. 4.3) and as the "M. temporalis" (Fig. 4.3), which is a mammalian jaw adductor muscle. Indeed the entire description and figures of the jaw and tongue muscles and of the jaw ligaments are so poorly done and are so wrong that they are an affront to avian anatomists. The action of several jaw adductors (raising the mandible) is given as "Depresses the oral cavity" (pp. 120–121). The articulation between the quadrate and the squamosal is not described, nor are those between the

quadrate and pterygoid bones and between the pterygoid and palatine bones. The description and figure of the M. biventor cervicis (p. 126 and Fig. 4.8) little resemble this muscle, nor do I understand the description of the Ligamentum nuchae (p. 35). The description of the outer and middle ear (p. 268) is vague on points such as the attachments of the tympanic membrane to surrounding bones and mention of associated muscles and ligaments.

The figures, especially those of the skeleton, ligaments and muscles are of poor quality. Origins and insertions of muscles are not shown, nor are the directions of the muscle fibers. Articulations between bones are often unclear. Labeling is frequently incorrect (see Fig. 1.3 and Fig. 1.6). The outstanding example of how not to draw and label a figure is that of the arteries of the head (Fig. 3.18) in which the lines indicating the arteries, the numbering, and the headless arrows are merged into an unintelligible blur.

Histological coverage is limited mainly to the digestive system, endocrine glands, and blood cells; many important topics such as muscle fiber types and structure of the brain are omitted. Moreover the descriptions appear to be a general avian description rather than for the Coturnix Quail. The value of these histological descriptions is even more limited because of the use of black and white line drawing instead of colored illustrations. The figure showing development of various blood cells (Fig. 3.31) is useless when compared to other available illustrations, such as the excellent ones in Lucas and Jamroz's "Atlas of Avian Hematology."

The terminology Fitzgerald adopted represents a special problem. Aside from the statement that it is "based upon the format established by the International Anatomical Nomenclature Commission," no references are given to any sources of anatomical terms. The compilation of terms for veterinary avian anatomy is not completed, so that no source exists, to my knowledge, for the terms used in this monograph, making it very difficult for anyone who has to correlate Fitzgerald's terms with those used by other avian anatomists. Many of the standard sources of names in ornithological anatomy are not even cited, thereby presenting a misleading impression of background works of descriptive morphology and terminology.

As a morphologist I am much disturbed by the publication of this book. It does nothing to advance morphological knowledge or to point out new promising areas of research, but these lacks can be overlooked. No excuse exists, however, for the extremely low level of descriptive anatomy in this volume. Moreover this monograph may increase the already wide gap between veterinary and ornithological avian anatomists, at a time when both groups should work more closely with one another.

I urge strongly that "The Coturnix Quail" not be used as a source of anatomical information. Researchers using this species will have to rely upon other works on avian anatomy for answers to any questions on its morphology until another monograph on the anatomy of the Coturnix Quail is published. I can only recommend against the purchase of this book either for individual or institutional libraries.—WALTER BOCK.

Birds of the eastern forest: 2.—Paintings by James Fenwick Lansdowne, text by John A. Livingston. 1970. Boston, Houghton Mifflin Co. 261 pp. 9½ × 13 in., 60 col. pls., each with two-tone reproduction of pencil exploratory esquisse. $25.00.—In my review of the first book of Lansdowne's bird paintings, a collection titled "Birds of the northern forest" (see Sutton, Wilson Bull., 79: 250, 1967), I called attention to the "tremendous promise" evident in this young bird artist's work. I did not review the second book of his drawings, "Birds of the eastern forest: 1," a

volume that appeared in 1968, though I examined each of the 52 color plates carefully, partly to see whether they showed improvement, and partly because the more I contemplated them the more I wondered why I so greatly enjoyed them. I was puzzled by the fact that their shortcomings did not bother me much. The left leg of the American Bittern (Plate 6) seemed to have no tarsometatarsus. The left wing and left leg of the Turkey Vulture (Plate 9) were not well drawn. The Rough-winged Swallow (Plate 50) was far too big-headed. And so on. Yet somehow these inaccuracies seemed minor. Was something forcing me to lower my standards? Was I losing my grip?

Lansdowne's work continues to have shortcomings, many of them in fact, but what is good about his work is so very good that I am convinced we should let time and Lansdowne's own inner resolve correct the ills. The eye and face of the upper Blue Jay (Plate 53) in this most recent volume are wonderfully authentic. The open bill of the Common Crow (Plate 54) is extremely well done. The two Yellowthroats (Plate 87) are alive and convincing. So, now that I have made a sharply-focused statement or two, let me explain why Lansdowne's latest work as a whole pleases me.

I like it first because it does not force me to think of Fuertes or Thorburn or any other bird artist. Identifiable drawings of a given subject are obliged, in the nature of the case, to resemble each other. A Slate-colored Junco well drawn by a Lansdowne will, perforce, resemble a Slate-colored Junco well drawn by any other bird artist. Perhaps it is this very thing, this enforced uniformity or monotony, that gives "bird art" its bad name in gallery circles, that makes Picasso's "Bird on branch" and Morris Graves's shorebird squiggles *real art* while the sincerest efforts of bird artists are consigned to the limbo of "unacceptable representationalism." If I do not watch out, I shall find myself sidetracked. I have not set out to discuss trends in art. What I started to say was that while Lansdowne's Slate-colored Junco (Plate 107) is instantly recognizable as to species, and while it therefore looks like a Fuertes Slate-colored Junco or an Audubon Slate-colored Junco in certain important ways, it is nonetheless a *Lansdowne* Slate-colored Junco. It has come straight from Lansdowne and not from some other bird artist by way of Lansdowne.

I am not meaning to say that Lansdowne, working as he does in the hinterland of Vancouver Island, has intentionally shut himself away from outside influences. Not that at all. My guess is that he has studied Fuertes, Thorburn, and Liljefors—not to mention Audubon—very carefully indeed, and that he has decided, completely on his own, how these several artists have failed to show what he, Lansdowne, wants to show. So to his studio have come the branches, leaves, and other accessory material as well as the birdskins. He has selected and thought out and drawn. Would that more of his models had been living birds!

Another reason for my liking this collection as a whole is that the composition of each plate is good. A feeling for arrangement of material—for balance, for space needed here and mass needed there—must be innate. I suppose it can be trained, but first of all it must be there. Some bird artists seem to have it, while others do not. Bird artists who sign contracts for composite plates let themselves in for trouble: they must toss to the winds what finer feelings they may have for composition, for they are obliged first and last to crowd all the required bird figures in. Lansdowne may religiously depict every fruit he finds on a hawthorn branch chosen as his model, but my guess is that he long ago learned to select with great care and perhaps to leave out here, add there, bend a twig this way, another twig that way—in achieving precisely the end desired. By this time he knows that twigs grow, leaves unfold, and berries hang in interesting, "artistic" ways in spite of themselves. They are the victims of forces. Responding to sunlight and gravity pull, they arrange themselves

not only to the advantage of the plant of which they are a part, but also to the delight of the sentient human being who finds comfort in any natural orderliness that he perceives. The person who enjoys the functional beauty of leaf arrangement, who understands what happens to bones and muscles when a bird opens its mouth or when its toes clutch a twig, rejoices in accurate representation of these same things.

I confess that part of my enjoyment of Lansdowne's work stems directly from memories of the way I myself worked at bird drawing when I was his age. Part of it stems, too, from my liking for Lansdowne himself—for the resolute, redoubtable student and lover of birds that I know him to be.

Now for the shortcomings. Through discussing these I hope not to discourage, but to encourage, Lansdowne and other young bird artists. Since in all of these most recent drawings the highlights in eyes are bright and parts of the underplumage are shadowed, a three-dimensional quality obviously is intended. This demands creating an illusion of space between the bird and the perch on which it sits. Yet the Golden-winged Warblers and the upright goldenrod stems to which they cling (Plate 77) seem to be in exactly the same plane. Somehow the general effect here is of plant, birds, and skipper pressed flat and attached to a white herbarium sheet. In plate after plate, notably those showing Chestnut-sided Warblers (Plate 82), Baltimore Orioles (Plate 96), and Black-capped Chickadees (Plate 55), the effect is decidedly that of pressed leaves—all flat and arranged with idyllic neatness. This forces upon the birds too a certain flatness despite the highlights and shadows.

Certainly to be avoided is false illusion. In the Wood Thrush (Plate 65) the beautifully drawn leaves below the bird seem to come forward until we perceive, on examining the bird's feet and legs, that the leaves are intended to extend backward —away from the viewer.

What I have said in the two paragraphs above sounds as if I considered the plates discussed hopelessly ugly. This they are not. They are beautiful—if for no other reason—because Lansdowne has put so much of himself into them. This evidence of dedication can, oddly enough, be a powerful, if not a moving, part of any picture.

In the Catbird (Plate 62), however, too much brushwork, too much dedication, has destroyed, rather than produced, the feather effect, especially on the back and upper tail coverts. In the Carolina Wren (Plate 60) the drawing is off: too much of the left side of the head shows. Delineation that results in what appears to be an anatomical impossibility must be avoided: the right foot of the Mockingbird (Plate 61) appears to be zygodactylic. There is a mixup of feet and twig in the Tufted Titmouse at the left (Plate 56). The left foot of the Bobolink (Plate 92) ought to be grasping a leaf or petiole—but where is the foot? The hind toes of the Mourning Warblers (Plate 86) should be clutching those upright stems tightly, but they stick out as if useless. If Lansdowne will flex the toes of a perching bird he will see that when the front toes clutch a perch, the hind toes invariably do so too—unless broken.

Several of the birds in this series are too long-bodied, a direct result, I feel sure, of using skins as models. The defect is especially noticeable in the Mockingbird, Brown Thrasher (Plate 63), male Rose-breasted Grosbeak (Plate 101), and male Rufous-sided Towhee (Plate 104). By this I do not mean that the overall length is wrong, but that the neck-to-base-of-tail distance is too great proportionately.

Biologically the Savannah Sparrow (Plate 105) deserves sharp criticism. Here a female bird in fall plumage is shown singing. Female Savannah Sparrows sing very little, if at all, and not even male birds sing in the fall. I have observed the species closely every fall since coming to Oklahoma about 20 years ago. The drawing is beautifully done. It represents the fall plumage well, though it does not illustrate the statement in the text to the effect that there is a "yellowish line over the eye."

I hear murmurs across the land: "Professional jealousy! Look at the way Sutton softens poor Lansdowne up for the kill. Look at the way he compliments all that hard work, then tears it to shreds." Such murmurs have an element of truth. The important fact is, however, that I am a great believer in Lansdowne. Potentially he is one of the greatest bird artists ever. But he should skin birds, study their muscles, tendons, and bones, watch them endlessly at close range, rear them in captivity, and familiarize himself with feather tracts, if he is to draw birds really well. And certainly he must go on drawing. The publishers will see to that.

John Livingston's text is pleasant and readable—occasionally a bit patronizing as when he calls the Brown Creeper—in my opinion one of the most beautiful of living creatures—"a somewhat undistinguished bird" (p. 34). His references to what Selous, Wilson, Bent, and other naturalists have thought and said are to the point.

"Birds of the eastern forest: 2" is a handsome, well made book. In my copy the colors are excellent throughout and the registration virtually flawless. The whole opus has a freshness and sparkle reminding us of "the old days" before air pollution hung a pall over everything except the newspaper headlines.—GEORGE MIKSCH SUTTON.

How to attract house and feed birds.—Walter E. Schutz. 1970. New York, Bruce Publ. Co. 196 pp., 101 photos, numerous drawings. $7.95.—Caveat emptor! Any useful or original information in this enlarged edition of two previous books under slightly different title by the same author will be found in the chapters dealing with food and birdhouses. Chapters on ecology, bird watching, and one on useful hints contain almost nothing of value. Birds are depicted in the same exaggerated terms of economic importance that they were early in this century. Even Edward H. Forbush might have blushed over the credit that the author gives them as destroyers of noxious insects and weed seeds. At the same time the author, by deploring water and air pollution and the use of pesticides, aligns himself firmly with the environmentalists. "Invisible deadly gases hang like a pall of death over our largest concentrations of population," he warns.

If the reader has not been overcome by deadly gases by the time he reaches page 23, he will find a section on bird identification. Line sketches accompany brief descriptions of some 40 common species. The author might have warned the reader that any resemblance between the descriptions and the bird depicted is purely coincidental. Except for the white spots in the tail, the bird represented as a House Wren looks reasonably close to a Short-billed Marsh Wren. The Ruby-crowned Kinglet has been given a crown patch that would be exaggerated for a Golden-crowned Kinglet. The several woodpeckers figured look as though they had been copied from the animated door-knocker woodpeckers sometimes seen in novelty shops.

Since there are no scientific names anywhere in the book, the reader may wonder, as did the reviewer, just what a "pasture rose" is (p. 47). In this same section on plantings to attract birds, Virginia creeper is rated as perhaps the best producer of natural food for birds. Yet in "American wildlife and plants" (Martin, Zim, and Nelson, New York, Dover Publ., Inc., 1951), Virginia creeper has only 30 users as against 79 users of elderberry.

Under a section that follows on the winter feeding of songbirds, the reader (if any are left) will find four waterfowl flyway charts and one of the migration of the American Golden Plover. Not only are these charts strangely out of context but they have been lifted bodily and without acknowledgment from Frederick C. Lincoln's "Migration of birds" (U. S. Dept. Interior, Fish & Wildl. Serv., Circ. 16, 1950). Of some 100 black and white photographic reproductions in the book only 28 contain

acknowledgments. How many are to be attributed to the author or his friends is anyone's guess. While many of the photographs and other illustrations show ways to prepare suet or mount squirrel guards, and are quite useful, others add nothing to the book and were inserted apparently as a gimmick to promote sales. How else can one reconcile the presence of several photographs of large wading birds or Audubon's bluebirds and Passenger Pigeons?

On page 121, the author finally reaches the subject he seems to know best—namely, the design and construction of birdhouses. The information on page 124 concerning dimensions of birdhouses and recommended heights from the ground looks reliable and it is. With only very minor exceptions it is taken directly from "Homes for birds" (U. S. Dept. Interior, Bull. 14). No acknowledgments are provided, but by now the reader should be used to this. The author goes on to supply numerous diagrams and plans for making birdhouses and nesting shelves. It will be noted that specifications often differ drastically from those in the Bulletin table. The reader would be well-advised to stay with the older, truer recommendations. In many instances, figures noting dimensions are so crowded together that they cannot be understood. The diameter of the opening for the bluebird house, for example, reads as though it were 11.2 inches. In reality it is 1½ inches.

The author states that perches on birdhouses are unnecessary and even objectionable; yet many of his detailed plans provide for perches. Even the hollow-log house intended for Downy Woodpeckers has a perch! In much the same way, he speaks disparagingly of the ornateness of many of the birdhouses offered for sale by roadside stands and novelty shops. Many of his own plans, however, call for ornate embellishments that add nothing to the utility of the house. Furthermore the author is on shaky ground when he recommends dark colors or stains for all birdhouses except those for Purple Martins. Light colored houses are cooler and appear to be just as acceptable to most birds. It is now well-recognized that guard rails on martin houses are very helpful in preventing young birds from falling off the ledges prematurely; yet the author makes no mention of this fact and shows no guard rails in his detailed plans. The Purple Martin suffers again in the author's recommendation for lowering the house by means of a pivot at the base of the pole. If the house were lowered for any reason during the nesting season by means of this arrangement, young and eggs would fall out to the ground. This difficulty can be overcome by using a two or three section telescoping pole. In his specifications for opening birdhouses the author again reveals an indifference to the safety of eggs and young. The only method shown for opening is to undo screws and remove the bottom. One can picture the fate of the contents under this crude treatment. Why not a hinged roof like nearly all other birdhouse designs?

One finds a drawing of a White-throated Sparrow below plans for a Song Sparrow shelf, a Flicker next to plans for a Red-headed and Hairy Woodpecker house, and a Belted Kingfisher next to shelves for Phoebe and Barn Swallow!

Omissions, if anything, exceed misleading information. Almost nothing is said about where to place birdhouses or how to cope with undesirable nest competitors. There is nothing on foods or feeders that might discourage Starlings or other unwelcome birds. There is nothing about unsafe foods. In spite of the many warnings in the literature about peanut butter choking birds or other hazards to birds in peanut butter; this food is recommended without qualification. Nothing is said about the hazards of using honey-water in hummingbird feeders. The author recommends adding salt to the already salt-rich drippings that are an ingredient in fat mixtures. There is nothing on how to prevent birds from crashing into plate glass windows.

It would perhaps be an overstatement to say that this book represents a hazard

to birdlife. About all it does add to the literature on bird attracting are a few bird food recipes and some very debatable specifications for birdhouses and feeders. If the bird attracting public does need more information, which seems quite likely, the material could best be provided in an inexpensive leaflet suitable for use in the kitchen or workshop. Why pay for large wading birds and Audubon prints?—JOHN V. DENNIS.

Breeding biology of the Blue-faced Booby *Sula dactylatra personata* on Green Island, Kure Atoll.—Cameron B. Kepler. 1969. Publ. Nuttall Ornithol. Club., No. 8. Pp. vii + 97, 2 maps, 17 diagrams, 42 tables, 13 black and white photos. Cloth. $5.00.—This nicely produced booklet is the third recent major study of the breeding behavior and biology of *Sula dactylatra,* the Blue-faced, Masked, or White Booby. The previous studies were by Dorward (Ibis, 103b: 174–220, 1962) at Ascension Island and by Nelson (Ibis, 109: 194–232, 1967) in the Galapagos Islands. A modified version of a doctoral dissertation submitted at Cornell University in 1968, this monograph reports the results of fieldwork done on Kure Atoll in 1964 and 1965 by Kepler and other members of the Pacific Ocean Biological Survey Program.

The monograph's format is still that of a thesis—six chapters preceded by acknowledgments and an introduction and followed by a summary, an appendix, and literature cited. The appendix contains the methods used. There is no general discussion nor a conclusion. The chapter headings and their sizes are as follows: environment 7 pages; taxonomy, distribution, and morphology 3 pages; the colony 15 pages; breeding biology 30 pages; spacing-out behavior 15 pages; and behavior of the pair 14 pages. If we regard the first three chapters as further introductory material, the core of this work consists of almost equal amounts of breeding biology and breeding behavior. Kepler gathered most of the behavioral data and was greatly helped by and acknowledges the "spade work" that had been done by Dorward and Nelson. The biological data were gathered mainly by others.

Students of animal behavior usually tend to concentrate on one and rarely more of the following aspects: description, derivation, motivation, and function. Kepler's descriptions are adequate for the recognition of the various displays. There is virtually no discussion of derivation or of motivation. The main contribution is the elucidation of function by the skillful use of circumstantial evidence, which was also used to solve the ancient problem of why this booby and several other bird species lay two eggs and raise only one chick. Kepler found that 22 per cent of the chicks fledged had hatched out of second eggs, and concludes that the second egg is an adaptive buffer against loss of the first egg.

In trying to document as many facets as possible about the boobies on Kure Island in far too short a time, some aspects are not treated as rigorously as one would expect for a doctoral dissertation. Although Kepler as author carries the full responsibility for his text, many of the criticisms that follow may have arisen mainly from the institutional setup within the Pacific Ocean Biological Survey and at Cornell. To write up the Kure Island booby material as a doctor's thesis must have been an afterthought. Otherwise it is incomprehensible that Kepler had to make special acknowledgment of permission granted by his field director to spend an extra 2 months during the crucial courtship and early egg-laying period on Kure Atoll, out of a total of only 4 months on the atoll.

Chapter 1 on the environment at Kure Atoll is a straightforward description of the study area. It also documents the man-made changes in recent years at attempts

to improve the habitat for Laysan Albatrosses as an atonement for the carnage at Midway Island, and by the establishment of a Coast Guard Loran station.

Chapter 2 on taxonomy, distribution, and morphology is short and inadequate. From the taxonomic point of view it is a pity that Kepler chose to designate the boobies he studied as being the subspecies *S. d. personata* distinct from those studied by Dorward, *S. d. dactylatra*, and Nelson, *S. d. granti*. Neither Dorward nor Nelson considered the subspecific identity of their boobies, and Kepler fails to demonstrate the validity of the supposed subspecific distinctiveness. Even worse, he speculates about the distribution and separation of *S. d. personata* and *S. d. bedouti* in the waters around Australia, but fails to indicate their type localities at breeding colonies on Raine and Bedout Islands. Furthermore the southermost breeding colony of the species and possibly *S. d. personata* is at Lord Howe Island and not at the Kermadec Islands, an error that Kepler probably copied from Palmer (Handbook of North American birds, vol. 1, New Haven, Connecticut, Yale Univ. Press, 1962). Nor does he mention the well-known colony at Norfolk Island, between Lord Howe and the Kermadec Islands. Raine, Bedout, Lord Howe, and Norfolk Islands are all within the area of his map (p. 11) labeled "Geographic distribution, breeding locations, and peak egg dates for *S. d. personata* and *S. d. granti*," which also fails to show the published breeding colonies and breeding dates in the Banda, Coral, and Tasman Seas.

In the paragraph on the morphology of the adults he claims that the females are significantly larger than males and backs this statement up with measurement of 27 males and 27 females in Table 2.1. That females average larger than males may be statistically significant (the test used is not specified), but it is biologically insignificant when the ranges overlap more than 70 per cent, as they do here. He also does not indicate whether within pairs the female is always larger than the male. The reverse is usually the case in gulls.

To present the means of the measurements by up to six figures where barely two are significant is meaningless. Live 2-kilo birds were weighed in wiremesh baskets suspended from a spring balance scaled in (1, 10, or 100?) ounces, yet their mean weights are calculated to the nearest hundredth of a gram! Most of the fish and squid boobies eat weigh more than a hundred grams.

Chapters 3–6 are also supported by quantitative data marshaled into statistically and biologically suspect and misleading tables. For example in Table 3.1 the distribution of the times that nonbreeding males and females are absent from the colony is clearly bimodal with peaks at 1–2 hours and at 7–8 hours for both sexes. Kepler, however, claims that the mean times absent, males 4.91 hours and females 5.91 hours, are significantly different ($t = 3.276$; $P < 0.0001$). He wonders (p. 18) about the preponderance of birds absent for less than 2 hours and realizes that the time might be too short for foraging and feeding purposes, but he is apparently unaware that his birds might have gone to sea just to bathe and/or drink. The same fallacies are present in Table 4.8, which deals with absences of breeding birds.

In a brief statement on comparative behavior Kepler tries (pp. 73–74) to compare the sky-pointing of *S. d. personata* on Kure Atoll with Nelson's descriptions of this male advertising display for *granti* and Dorward's for *dactylatra*. Without any indication of individual and local variation Kepler finds minor subspecific differences in tail and bill posture. He seems to have failed to notice, however, that the wing tips as shown in Figures 6.1 and 6.2 are rather far apart when compared with the descriptions and illustrations in Dorward (ibid.), Nelson (ibid.), and Simmons (Living Bird, 6: 187–213, 1967). The distance between the wing tips during sky-pointing

happens to be species-specific in boobies (van Tets, Ornithol. Monogr., 2: 1–88, 1965).

Despite the blemishes in the presentation of the data, Kepler has significantly increased our knowledge of the breeding biology of *S. dactylatra,* and we should be grateful to the Nuttall Ornithological Club for having published his paper.—GERARD F. VAN TETS.

The encyclopedia of the biological sciences.—Peter Gray (Ed.). 1970. Second Ed. New, Van Nostrand Reinhold Co. Pp. xxviii + 1,027, numerous text figs., photos, graphs, tables. $24.95.—Reviewing an encyclopedia in an objective and comprehensive sense is a formidable, perhaps impossible task for most people. Faced with a collection of information about a compartment of knowledge as broad as biology, even the most widely versed scientist is a specialist, and can only superficially evaluate facets of the subject based upon critical appraisal of the tiny spheres within with which he has special acquaintance. Since a good encyclopedia is always multi-authored and can hardly claim that all of its inclusions are written with equal accuracy, scope, and attention to detail, the critic can only hope that the editor has chosen his authors with about the same acumen in all areas of the field and that a critical sampling of a few subjects will suggest the approximate validity of the whole work.

Below, keep in mind that I am an ornithologist, with special interests in ecology, behavior, voices of birds, systematics, and evolution. I went through the volume, took notes on about 25 topics and offer the following:

Harrison Tordoff wrote on the topic *Aves* (pp. 66–69) and his summary is a model of conciseness and terseness, properly neglecting subjects such as *feathers,* which get space on their own. He treats *molt* only in part of one short paragraph and thus one expects to find more information on this complex phenomenon somewhere else. It is not under *feather,* or *hormones,* however, and the valuable subject index terminating this book indicates it has been neglected.

Since molt is treated so briefly, I was surprised to find *beak* (almost totally in reference to birds) given more than a page (pp. 91–93) to itself under the authorship of Malcolm Jollie.

In ornithological circles the term *bioacoustics* has become rather well-established It is not to be found in this book; rather the term biocommunication includes it. The author, W. John Smith, is one of our foremost workers on the subject, and his summary is a good one, giving birds their due space. In view of the revolution in the study of bird voices in the past 20 years, I find it puzzlingly anachronistic that the topic *bird songs* is given almost two pages (pp. 114–115), written by the late Aretas A. Saunders of the classical era of bird song study. Quite understandably Saunders is somewhat old-fashioned and writes little of pertinence to contemporary biologists, except for the last four paragraphs. He gives references only to Eliot Howard (1920), Wallace Craig (1943), F. Schulyer Mathews (1921), and himself (1951).

Under *cave biology* birds are not mentioned and, following up this lead, I found no mention of echolocation as a heading or in the subject index. It is mentioned briefly under Chiroptera.

George Wallace wrote summaries on the Cuculiformes, and though he briefly discusses social parasitism in cuckoos (Tordoff does so very briefly for all families that practice this unusual habit) no mention is made of the work of Friedmann by anybody.

Under electronic instrumentation by, ironically, R. H. Kay, there is no mention of the sound spectrograph, audiospectrograph, sonograph, or sound analysis.

Avian community ecology is well-covered, as Robert MacArthur wrote the entry under *community*.

Occasional writeups have not been brought up-to-date as perhaps they should have. E. O. Dodson writes on *evolution* and cites no references beyond 1960 (Dodson, "Evolution: process and product," New York, Reinhold). And surely the subject *forestry* deserves better than two pedestrian columns by Aretas A. Saunders in which Sargent (1905) and Gordon (1940) are the only references cited.

A. Wolfson is responsible for the summary of photoperiodism in animals, and on a subject largely composed of information from short isolated source papers in journals, he cites no references. G. Lowery and R. Newman summarize *migration* nicely.

Pesticides (or insecticides) do not appear as headings or in the subject index.

Speciation, the subject summarized by Lincoln P. Brower (pp. 881–882) could doubtless have undergone an updating, for it cites only Dobzhanzsky (1951) and Simpson and Roe (1958).

In summary, a survey of some of the subjects of interest to ornithologists indicates that this encylopedia is an uneven work in many ways. Its faults range from failure to cover recent works and to cite pertinent literature to omission or inadequate treatment of deserving topics. I am most content with the work on topics about which I know little or nothing and realize the erratic nature (and possibly the impossibility of the task in the limited space) only in subject areas with which I am familiar.—JOHN WILLIAM HARDY.

Australian parrots.—Joseph M. Forshaw. 1969. Melbourne, Australia, Lansdowne Press, and Wynnewood, Pennsylvania, Livingston Publ. Co. Pp. xiv + 306, 3 figs., numerous text photos and drawings, 5 col. pls., 68 col. photos. $29.50.—This large and lavishly illustrated volume is another in the recent trend toward spectacular as well as informative treatises on special bird groups. The present work deals with the Australian parrots, covering all species and races occurring on that continent (as well as Tasmania and Norfolk Island). The text is well-written and contains bountiful information; of special interest are the sections in the species accounts treating various aspects of behavior and captivity. Although the volume seems to be slanted toward the aviculturist, I have found it an excellent source of information on this group of birds.

The plan of the text is basically a series of species accounts. Following brief introductory notes on each higher taxonomic category (families and genera), sections in each species account are devoted to other names, description, distribution, subspecies, general notes, habitat, habits, movements, flight, call, feeding, breeding, and aviary notes; an excellent distribution map accompanies each account. All species and most distinctive races are depicted by a color photograph (occasionally more than one per species) or a color plate. John C. Yrizarry painted the five color plates, which illustrate the various races of the Double-eyed Fig Parrot (*Opopsitta diopthalma*), the Red-cheeked Parrot (*Geoffroyus geoffroyi*), and the three extinct or vanishing species, the Norfolk Island Kaka (*Nestor productus*), the Paradise Parrot (*Psephotus pulcherrimus*), and the Night Parrot (*Geopsittacus occidentalis*); the remaining species are all pictured by color photographs. I would judge Mr. Yrizarry's paintings to be above average and the color photographs as excellent. Clearly most of the latter were taken in aviaries (e.g., each photo depicting the three species of *Glossopsitta* shows the individual birds perched on the same limb),

but this should not detract from the excellent quality of the pictures. Perhaps the only drawback to the photographs, at least in my estimation, is the fact that each color print is glued to the page along its top, much as was done in Greenewalt's "Hummingbirds."

Taxonomically the author must be classified as conservative, recognizing even the families Loriidae and Cacatuidae as distinct from the Psittacidae. But the data on each species are excellent and reflect the author's in-depth knowledge of the group. In my mind, this is the best and most attractive book available on the Australian parrots. If you are looking for a lavish volume in the $30 range as a present for the ornithologist, this book would make a fine choice.—BURT L. MONROE, JR.

A portfolio of Australian birds.—Keith Hindwood. 1970. Rutland, Vermont and Tokyo, Japan, Charles E. Tuttle Co. 25 col. pls. by William T. Cooper. Imperial 4to, 113 pp. $17.95.—This handsome book with a fine buckram binding and decorative paper jacket has more wasted space in it than I have seen in many a day. On 54 of its 113 pages (11½ × 14 inches) not a thing appears—not even a page number. It is luxury indeed by today's standards when the finest of paper is combined with beautiful color reproduction in a well-designed book full of wide open spaces. What a great pity that this is wasted on badly punctuated, labored English and glassy-eyed, stiffly wooden bird paintings.

In William T. Cooper's 25 plates not one bird flies and no nests, no eggs, and no chicks appear. The greatest animation indicated is the Black-faced Flycatcher that, with its feet still firmly on a perch, has half-opened one wing in a desperate effort to catch a flying insect without being airborne itself. The text with that flycatcher says "Flying insects are caught on the wing." The painting indicates that reference is evidently to the wing of the insect, not the bird. Mr. Cooper's birds look like pictures of mounted specimens. It is a great pity that his fine techniques, beautiful feather work, and the superior Japanese color reproduction have no spark of life. Every bird that could possibly be attached to a perch is on one. Only two obvious ground birds are without the grasping-foot pose and in both of these, the Squatter Pigeons and the Spotted Quail-thrushes, one of the pair is posed so that its feet are hidden. Perhaps Mr. Cooper doesn't know how to draw walking bird feet. If this is so, it might also account for the odd selection of birds, which ignores all water birds and shows only two birds of prey and one galliform. The book is without an index and a bibliography and without any new or remarkable information. The proofreading seems to have been carefully done, so I presume the author meant to say "two or three eggs form a sitting" instead of a "setting" and introduce a new meaning for that word. But how did he determine that a lark was "foolish" (p. 14) or a pigeon "fearless" (p. 38)?

The only reason I can see to thank Charles E. Tuttle for bringing this extravaganza to the United States is that it, like the "Godey's Lady's Book," will some day delight an interior decorator with prints to go with any decor.—ELIZABETH S. AUSTIN.

Birds of Asia.—Abram Rutgers. 1969. New York, Taplinger Publ. Co. (printed in Holland). 321 pp., 160 reduced reproductions of plates from "Birds of Asia" by John Gould and R. Bowdler Sharpe. $15.00.—When a mediocre text is appended to bad color reproductions of stylized pictures of a century ago, no contribution is made to modern ornithology and no honor accrues to long dead authors and artists.

The foreword of this book says, "The *Birds of Asia* was, in fact, published post-

humously, in 1886." This is not true. The "Birds of Asia" was published in 35 parts over a period of 33 years, 1850-1883. John Gould died in 1881 and R. Bowdler Sharpe continued a number of his projects, among them "Birds of Asia." The illustrations for Gould's books were not all by Gould, and he did not always acknowledge the artists who contributed to his fame. J. Wolf painted some of the "Birds of Asia," just as Edward Lear painted the birds for other Gould works.

I have been considerably annoyed by a number of overpriced bird books republishing poor reproductions of pictures long in the public domain and brought forth by unscrupulous dollar-hungry Europeans to be foisted onto a presumably gullible American public. This "Birds of Asia" is a prime example of something we do not need in the United States. Any American with $15.00 to spend on a bird book will receive much greater value if he purchases one written by a competent American or British ornithologist and illustrated by one of the really great living bird artists of the same two countries.—ELIZABETH S. AUSTIN.

Aves marinas del Río de la Plata y aguas vecinas del Océano Atlántico (Seabirds of the Río de la Plata and adjacent waters of the Atlantic Ocean). —Rodolfo Escalante. 1970. Montevideo, Uruguay, Barreiro y Ramos S.A. 200 pp., 8 plates, 10½ × 7¼ in. Paper.—In a letter to the Review Editor, Professor Escalante mentions that in foreign countries the price of his book is U. S. $7.00. Order from Professor Escalante, Guayaqui 3425, Apto. 301, Montevideo, Uruguay.—This work treats in varying detail 67 species of seabirds (Sphenisciformes, Podicipediformes, Pelecaniformes, Procellariiformes and in the Charadriiformes the Chionididae, Stercorariidae, Laridae, and Rhynchopidae) known to occur in waters of the Río de la Plata and the neighboring Atlantic Ocean from southern Brazil (Río Grande de Sul and Santa Catarina) and Uruguay, south to the Province of Río Negro, Argentina. An appendix discusses briefly nine additional species and one subspecies known to occur along the Patagonian coast from Río Negro to Tierra del Fuego. The book is a useful illustrated identification manual combined with fairly full species accounts for 45 species.

Eight plates portray 48 species, most of which are represented by two or three half-tone drawings illustrating different sexes and ages. In addition to the plates, there are numerous keys (3 to families in the orders Procellariiformes, Pelecaniformes, and Charadriiformes and 7 to the species and forms in the Spheniscidae, Podicipedidae, Procellariiformes, Pelecaniformes, Stercorariidae, Larinae, and Sterninae).

The species accounts are excellent summaries of breeding biology, general habits, and geographic distribution, and supplement the plates and keys with detailed descriptions, including appearance (of sex and age groups when appropriate), characteristic flight behavior, colors of soft parts, and measurements.

"Seabirds of the Río de la Plata," useful as it is, could have been made even more useful by the inclusion of a tabular summary of what is known of the local seasonal distribution and status of each of the species treated.

This is an important addition to the literature of South American ornithology because it combines, in one volume, a convenient identification manual for most species one would expect to encounter in the region and a summary of the biology and distribution (both general and local) of 45 species.—PHILIP S. HUMPHREY.