

REVIEWS

Fundamentals of Ornithology.—Josselyn Van Tyne and Andrew J. Berger. 1959. John Wiley and Sons, Inc. New York 16, N. Y. ix + 624 pp., 168 figs. \$11.75.—On his death early in 1957, Van Tyne left an unfinished book designed as background for his graduate course in ornithology and as a general reference. He had completed what he regarded as the major contribution of the work, a summary of the main characters of each of the avian families of the world. He had plotted out the chapters to be included and had finished those on plumage and molt, migration, distribution, ornithological sources, and part of the glossary of ornithological terms. Berger, complying with a promise to Van Tyne, and in part on the basis of the latter's notes and card files, completed, or wrote entirely, chapters on paleontology, anatomy, senses and behavior, voice and sound production, flight, food and feeding habits, breeding behavior, social relations, taxonomy and nomenclature. The book contains a vast amount of well-organized information not elsewhere available under one cover. The chapters completed by Van Tyne were apparently left essentially as he wrote them, for reference lists following the chapters on distribution and migration include nothing published after 1954 and 1955 respectively.

The major chapter on bird families (amounting to about a third of the book) is a notably convenient and succinct compendium. Van Tyne recognized 168 families, deprecating the "unfortunate tendency" to reduce families to sub-families. His families are essentially those of Wetmore, whose order he follows. The major differences from the A. O. U. Check-list (1957) are that *Chamaea* is included in Timaliidae, the Coerebidae are dismembered (following Beecher) and the Caruelinae are transferred from the Fringillidae to the Ploceidae (following Tordoff). Each family is treated on a separate page, headed by an indication of the number of species in the family and an attractive drawing by G. M. Sutton of an included species. Summaries of family characters are given under such captions as: physical characteristics, range, habits (including voice), food, breeding. Selected references are provided for life-histories, technical diagnosis, and classification. The allocation of a single page to each family seems rather arbitrary, for some families include only one little known species (*e.g.*, Oxyruncidae, Zeledoniidae, Catamblyrhynchidae), while others are heterogeneous aggregations of hundreds of species having very different habits and appearance (*e.g.*, Accipitridae, 205; Tyrannidae, 365; Timaliidae, 282; Sylviidae, 398; Muscicapidae, 328; Thraupidae, 222; Ploceidae, 313; Fringillidae, 375). In dealing with these and other complex—and possibly polyphyletic—assemblages, it would have been more helpful to indicate important divergences of major, well-defined infra-family groups (particularly some of those recognized as families by others), rather than merely to list a series of characters (sometimes almost contradictory) found in the family, without designating to which subdivision they applied. Nevertheless, the summaries are useful, and informative, reflecting Van Tyne's broad knowledge and careful study.

Because written some years ago, the chapter on migration fails to mention the promising use of radar by Sutter and others, the studies of stellar orientation by Sauer, or the excellent reviews of various aspects of migration contained in "Recent Studies in Avian Biology" (1955). The statement (p. 206) that "no South American species is known to migrate into North or even Central America" does not represent present knowledge, even as applied to land birds.

As Berger is an anatomist, the anatomical sections are authoritative, and—better still—clearly written. Included is a helpful section, with many good drawings, describing the principal anatomical characters used in taxonomy. The discussion of behavior emphasizes that the way birds act depends on what they have to act with—their physical and physiological structure. In the treatment of plumage and molt, the generalization that “molt periods are very closely synchronized with the reproductive cycle and with seasons of the year”, though usually true in higher latitudes, does not apply to all tropical birds.

The chapter on taxonomy and nomenclature, while basically sound, seems oversimplified for a graduate reference work. Reliance is mainly on Mayr's views. In discussing speciation no mention is made of Dobzhansky's theory—elaborated as to birds by Sibley—that *after* a secondary contact between previously isolated populations, reproductive isolating mechanisms may evolve to prevent the “wastage” resulting from unfavorable hybridization. In the section on polymorphism, one misses reference to the theory that balanced polymorphism may be maintained because the same gene that alters external appearance may also have a physiological effect, significantly advantageous in the heterozygous rather than the homozygous condition. Huxley's useful review, *Morphism in Birds* (1955), is not listed. Incidentally, the illustration of the drongo, *Dicrurus hottentotus*, under the heading “Individual Variation” with the statement that it is “one of the most variable of birds”, seems a misinterpretation. That drongo shows extraordinary *geographic, not individual* variation. On the species-subspecies problem one unqualified quotation could mislead students as to current taxonomic practice, and, because earlier explanatory sentences are omitted, as to the quoted author's opinion: “. . . it is preferable for practical as well as scientific reasons to treat *all* doubtful allopatric populations as subspecies. The scientific reason is that the mere fact that a population was unable to overlap the range of its nearest relatives implies that it has been unable so far to develop isolating mechanisms that would permit coexistence” (*italics ours*). As the taxonomic status of all closely allied but geographically separated bird populations is “doubtful”, in the sense that one cannot prove or disprove the existence of reproductive isolating mechanisms, to follow the practice suggested would result in making conspecific numerous forms that everyone has always treated as species. Nor would it be “scientific”. If it is true that speciation occurs chiefly through the development of reproductive isolating mechanisms during geographic isolation, then some allied allopatric populations now existing are certain to have attained species rank. Failure to overlap does not imply lack of reproductive isolation when there are geographical barriers; and even when no such barriers exist, competition, rather than lack of isolating mechanisms, may keep adjacent populations from overlapping. Some will say that it is unimportant whether a population of uncertain status is called a species or a subspecies. But most men (even ornithologists) think, or at least react, in terms of names. Naming the beasts and birds was Adam's first reported act (Genesis, ii, 20)! Today a strong, and sometimes justifiable, tendency exists to disdain subspecies. Students are likely, therefore, to overlook possibly important differences in behavior and other characters, once a form has been reduced to subspecific status. There is thus a practical disadvantage in prematurely relegating to the ornithological limbo of subspecies those strikingly distinct, non-intergrading, populations that by long isolation may also have developed mutually inharmonious genetic constitutions and—for all we know—reproductive isolation.

The probability that this exceptionally well-prepared and useful book will be

cited as authority made it seem desirable to call attention to some omissions and questionable generalizations. Ornithology has reached a stage of such specialization, with an overwhelming proliferation of publications, that it is impossible for a student to keep current in all fields. One wonders also whether it is now feasible in a single volume to do full justice even to the fundamentals of ornithology. Within its scope the present book is the best available in English.—EUGENE EISENMANN.

Comparative Biosystematics and Life History of the Nuthatches *Sitta pygmaea* and *Sitta pusilla*.—Robert A. Norris. 1958. Univ. Calif. Publ. Zool. 56, no. 2: 119–300, 13 text figs. \$3.50. The Brown-headed Nuthatch (*Sitta pusilla*) is a resident of the southern United States, eastward from Texas and Oklahoma. The closely allied Pygmy Nuthatch (*Sitta pygmaea*) ranges through the mountains and humid coastal regions of the western states, from British Columbia southward through the Mexican highlands. Norris made intensive field studies of a color-banded population of nominate *pusilla* in southern Georgia and of nominate *pygmaea* in Marin County, California. In addition, a systematic study involving over 2,000 specimens was undertaken.

Obviously similar in many ways, these forms have been considered by some workers to be well-marked geographic races of the same species. Norris' findings—morphologic, ecologic, and ethologic—are copious and meticulously analyzed and presented in full detail. Morphologically, there is no overlap in qualitative differences in head coloration, tail pattern, and skull characteristics, and there are highly significant differences in skull measurements. Considerable importance is attached to differences in the pitch of their voices, the height of their nests, breeding chronology, territory size, roosting behavior, attentiveness and other aspects of their breeding biology. The author considers these differences, viewed collectively, to be significant at the species level and that potential reproductive isolation and full specific status have been attained.

Practical and theoretical difficulties plague the study of closely allied populations of birds that are allopatric in their distribution. Without recourse to a criterion involving degree of interbreeding, the student must base his opinion as to their systematic status on an evaluation of differences and similarities in other aspects of their biology. Norris has done this in a most scholarly manner, with useful comparative tables. The reality of differences in behavior, as interpreted by Norris in his two banded populations, may subsequently be challenged by workers more familiar with these nuthatches in other parts of their respective ranges. Such behavioral phenomena as territory size, materials used in nidification, productivity, boldness at the nest, attentiveness at the nest, and others considered by Norris are well known to vary both temporally and spatially in other species, depending upon the environmental situation in all its complexity. However, there can be no argument as to the objective reality of the morphological differentiation attained by these allopatric populations. Perhaps this alone substantiates the ultimate conclusion of species rank for each.—W. E. LANYON.

A Field Guide to Bird Songs of Eastern and Central North America.—Arranged to accompany, page by page, Roger Tory Peterson's A Field Guide to the Birds. Recorded under the direction of Peter Paul Kellogg and Arthur A. Allen, in collaboration with Roger Tory Peterson. 1959. Houghton Mifflin Co., Boston. Two 33½ RPM recordings (four sides). \$10.00.—These discs reproduce voices of over 300 species, from recordings in the Cornell University Laboratory

of Ornithology, which has pioneered in a field that will increasingly throw light on many aspects of ornithology. Its library of bird song tapes, doubtless the largest in the United States, has been freely open to the students. The present issue makes available to the public the most comprehensive series of North American bird sounds yet recorded under one title. The samples for each species are brief, and the jacket wisely warns that local "song dialects" may exist, indicating in what state or province each recording was made. Helpful, too, is the characterization of a vocalization as a song or as a call, occasionally with brief mention of the activity it accompanied.

Many of the songs (*e.g.*, Bachman's Warbler) here included have not been previously available on a record. How much remains to be done is indicated by the fact that only about 70 per cent of the 440 species treated in the main text of Peterson's eastern guide are represented. Most of those omitted are nonpasserine species breeding in remote areas or birds merely casual in the eastern states. But some omissions are surprising, for they involve birds occurring regularly, or even nesting, in the East. As many rarer nonsongbirds are included, one must assume that the Cornell Laboratory lacked adequate recordings of these omitted species. In the hope of encouraging others to make such tapes available to the Laboratory—and thus to students generally—some of the more vocal of such birds are here mentioned. Among the missing nonpasserines are: Horned Grebe, Mottled Duck, Green-winged Teal, Golden Eagle, Short-tailed Hawk, Peregrine Falcon, Spruce Grouse, Black Rail, American Oystercatcher, Snowy and Wilson's Plovers, Ruddy Turnstone, most of the sandpipers (Solitary, Purple, Pectoral, Baird's, White-rumped, Western, Sanderling, and Knot), Long-billed Dowitcher, many of the terns (Forster's, Roseate, Sooty, Royal, Sandwich, and Noddy), White-crowned Pigeon, Mangrove Cuckoo, Saw-whet Owl, Red-cockaded and Northern Three-toed Woodpeckers. Though most of these shorebirds breed in the far north, their diagnostic calls are frequently heard on migration in areas frequented by bird watchers. Almost all the native passerines nesting in the East are accounted for, but among the missing are such familiar birds as Gray Kingbird, Gray and Scrub Jays, Brown-headed Nuthatch, Golden-crowned Kinglet, Northern Shrike, Water Pipit, Red Crossbill, Painted and Snow Buntings. Florida workers should be able to get recordings of many of the foregoing, as well as of the endemic Cape Sable and Dusky Seaside Sparrows. Though calls, as well as songs, of many species are given, there are some regrettable omissions, notably the diagnostic calls of the Downy Woodpecker and certain thrushes.

In a publication of this kind, there is always a difficult problem of selection. But to achieve the completeness which is a major feature of the Peterson bird guides, there will have to be a sample of the basic song patterns and major calls of each species in the area. This would surely require three discs, and presumably a higher price. Nevertheless, the public that avidly buys the field guides would pay the price of a song guide of equal ingenuity and thoroughness. While not attaining this level, the present record is very welcome and well worth the price.

—E. EISENMANN.

Instructions to Young Ornithologists. Bird Biology.—J. D. Macdonald. 1959. Museum Press Ltd., 26 Brompton Road, London, S.W. 7, England. 128 pp., 16 photos., 20 text figs. 12s. 6d.—Contrary to what one might expect from the title, this book does not deal with methods of bird collecting or even of recording observations. It is an introduction to avian biology by the keeper of

the great bird collection in the British Museum (Natural History). While written generally in a colloquial style, presumably because part of a series designed for young people, this work is no juvenile; nor is it light reading. Almost half the text is devoted to a survey of bird anatomy and morphology. Many professional ornithologists and experienced bird watchers would find instruction in this little work. The reviewer did.—E. EISENMANN.

La Quaglia. Vita—Caccia—Allevamento.—Augusto Toschi. 1959. Laboratorio di Zoologia Applicata alla Caccia, Univ. Bologna, Italy. Suppl. Ricerche Zool. Appl. Caccia, 3 no. 1. 267 pp., 55 figs. (many in col.). Lire 2800.—This is a survey of the quail genus *Coturnix*, with particular reference to the life history, rearing in captivity, and methods of hunting and trapping the European and Japanese forms, *C. coturnix coturnix* and *C. c. japonica*. As in the United States, considerable experimentation is being done in Italy with a view to the introduction of the Japanese race, which is less migratory than the native subspecies. In captivity the semidomesticated Japanese females have been reported to lay at the early age of 35 days, but the author says the young are weak unless the parents are at least 50 days old. In Japan some females are said to lay 30 eggs a month and 365 a year, with high productivity lasting a year or a year and a half. A good bibliography on the genus *Coturnix* is included.—E. EISENMANN.

Raubvögel und Eulen der Heimat.—Otto Kleinschmidt. 1958. Third ed. A. Ziemsen Verlag, Wittenberg-Lutherstadt, Germany. xx + 94 pp., 61 col. pls., and 17 photos or drawings.—This posthumous revision of a popular work on the hawks and owls of Germany has more than local interest. It provides a color plate with a well-organized, succinct, one-page summary of the major life-history facts of 46 species (many of them Holarctic). Half the book is devoted to miscellaneous (and illustrated) aspects of hawk and owl biology, including double-down development, individual variation, differences in feather markings of adult and immatures, and the geographic forms (on the "Formenkreis" theory) of Peregrine Falcon, Gyrfalcon, and Goshawk. Those interested in field marks will find useful the photographs of flight patterns, showing how a *soaring* Goshawk (unlike the smaller *Accipiter nisus*) fans out its tail broadly, so that, with its heavy body and widely spread wings, it looks much like a *Buteo*. The bibliography at the end is conveniently arranged by species, supplying references to two or more recent articles for almost every species. The technical nomenclature, following the author's well-known views, deviates in some instances from that customary, but no difficulty will be encountered in recognizing the bird intended.—E. EISENMANN.

A Bibliography of Birds. With Special Reference to Anatomy, Behavior, Biochemistry, Embryology, Pathology, Physiology, Genetics, Ecology, Aviculture, Economic Ornithology, Poultry Culture, Evolution and Related Subjects.—Reuben Myron Strong. 1959. Pt. 4. Finding Index. Field Mus. Nat. Hist., Zool. Ser., 25, pt. 4: 1-186. \$2.75.—This is the concluding volume of a monumental bibliography; the earlier parts, Author Catalogue and Subject Index, appeared in 1939 and 1946 (see reviews Auk, 57: 264-265, 1940; 64: 478, 1947). Expressly omitting the fields of taxonomy and distribution (although many of the major faunal books and papers to 1938 are listed), this bibliography attempts to cover all significant papers in its field through 1926, and includes many published through 1938. The present Finding Index facilitates the use of the treasury

of information contained in the preceding volumes. It is a simple alphabetical index referring to the various pages of the complex Subject Index, where subjects are more elaborately treated (with author and date given). A Corrigenda to the preceding parts is included. With the constantly increasing flood of ornithological literature, a good bibliography, such as this, is essential.—E. EISENMANN.

RECENT LITERATURE

EDITED BY FRANK MCKINNEY

ANATOMY AND EMBRYOLOGY

- DUIJM, M. 1959. On the position of a ribbon-like central area in the eyes of some birds. *Arch. Néerlandaises Zool.*, **13**, Suppl. 1: 128-145.—Review of the known occurrence of a ribbon-like ridge visible on macroscope examination of the retina in some birds. Although presence or absence seems to run in families, some genera of the same family and even some species in the same genus may lack it while others show the ribbon-like area; e.g., *Corvus brachyrhynchos* is reported to have it and *Corvus corone cornix* to lack it. The author believes that the head of a bird is held in a way that tends to place the ribbon-like area in horizontal position and that this may serve in spatial orientation. (In English.) —E. E.
- KAMAR, G. A. R. 1959. Developmental changes in the reproductive organs of the male Fayomi fowl. *Poultry Sci.*, **38**: 775-781.
- LINDENMAIER, P. and M. R. KARE. 1959. The taste end-organs of the chicken. *Poultry Sci.*, **38**: 545-550.
- MEUNIER, K. 1959. Die Allometrie des Vogelflügels. *Zeitsch. wissensch. Zool.*, **161**: 444-482.—The relations of bird wing dimensions to body weight, size, type of flight, treated mathematically from an aerodynamic viewpoint.—E. E.
- RIGDON, R. H. 1959. The respiratory system in the normal white pekin duck. *Poultry Sci.*, **38**: 196-210.—Gross and fine anatomy of the respiratory tract are studied by injection of latex and of ink as well as by histological methods. Number of connections of the nine air sacs, extent of pneumaticity of bones, and a peculiar feature of the parabronchi in that groups of them terminate as large air spaces at the surface of the lungs are described.—P. H. B.

BEHAVIOR

- ALDER, J. 1957. The Dipper's winking. *Brit. Birds*, **50**: 267-269.
- BARBER, D. R. 1959. Singing pattern of the common chaffinch, *Fringilla coelebs* Linn. *Nature*, **183**: 129.—Differences in breeding song activity exist between bird populations in different parts of the country.—H. C. S.
- BLUME, D. and G. JUNGE. 1959. Beobachtungen an Grauspechten (*Picus canus*) im Hessischen Hinterland. *Vogelwelt*, **80**: 65-74.—Behavior notes on the Grey-headed Woodpecker in Germany. Drawings showing comparative peering postures of four European woodpeckers when disturbed from their holes, and tables comparing the behavior of *P. canus* with the allied Green Woodpecker (*P. viridis*) are interesting.—E. E.