

REVIEWS

EDITED BY WALTER J. BOCK

Type-specimens of birds in the British Museum (Natural History). Vol. 1, Non-passerines.—Rachel L. M. Warren. 1966. London, Trustees of the Brit. Mus. (Nat. Hist.) Publ. 651. Pp. ix + 320. £4. **Vol. 2, Passerines.**—Rachel L. M. Warren and C. J. O. Harrison. 1971. Ibid., Publ. 691. Pp. vi + 628. £13.—Lists of specimens will never become best-sellers; but they may be valuable to the scientist, as in the present case. In it the scholar will be reminded at certain points of Bradford Torrey's remark, "There's a world of good reading in a check-list." For example we read (1971: 322): "**magnirostris**—*Geospiza magnirostris* Gould, 1837 . . . **53** (i.e., Geospizinae)/Proc. Zool. Soc. Lond., 1837: 5. SYNTYPE, Adult female (relaxed mount). Reg. no. 1855. 12.19.80. Galapagos Archipelago (Chatham Island, on label). Collected by C. Darwin. Purchased of the Zoological Society of London. There are several other syntypes in the collection."

Even for Darwin's pioneering Galápagos collection, with its eventual monumental impact on human thinking—through his "Origin of species"—the authors could not afford further discussion. Had space permitted, they might well have mentioned recent discussions of these moot types, as also of others (e.g. *Cathartes aura meridionalis*). But given the enormous numbers of types to be treated, a skeletonized presentation was inevitable. For the tedious task of identifying and segregating the older types, and of producing these substantial volumes, we must be grateful to Miss Warren, her co-author, and the various other ornithologists who aided, such as Hellmayr.

To modern students, who may be misled by loose talk of old-time "typology," and others, one can certainly recommend the reading of these volumes, particularly the introductions. Problems confronting the authors arose chiefly from the fact that nearly all early workers, holding broad and immutable species-concepts, did *not* concern themselves with particular specimens, details of geography, or minor geographic variations. Collectors' labels, too, were sketchy, vague, and often carelessly affixed, perhaps long afterward—if indeed the collector wrote any. In any case, museums or purchasers were apt to remove and replace them with their own, more "learned" labels giving only the general range of the species and perhaps its synonymy. Miss Warren notes that, in the mid-19th Century, "The practice of designating type-specimens developed gradually, and authors differed very much in their concern for it." The word "type" did not then have its present restricted meaning in taxonomy; nor were types considered important before about the end of the century, e.g. many were exchanged or discarded if better material was secured later. Types were even unlabeled (Loddiges Collection) or bore labels without scientific names (Swainson Collection).

In the British Museum, segregation of types "was begun before 1938," but many syntypes are not segregated today. Just what specimens an author had, or described, is often difficult or impossible to determine, and frequently descriptions were (and are) drawn up from more than one. As the holotypes and "selected" syntypes (i.e. those set aside and here listed) alone number about 8,500, the authors could hardly afford to give data on the even greater number of unsegregated syntypes! Nor had they time for such exhaustive research on individual types as were frequently carried out by Deignan (1961, U.S. Natl. Mus. Bull. 211) and occasionally by Bangs (1930, Bull. Mus. Comp. Zool. 70: 147-426). Still, origins and measurements of the selected types do seem to have been roughly screened. Unlike Deignan

and Bangs, the present authors list types alphabetically by specific or subspecific names. Thus at the species/subspecies level, the volumes are self-indexing except for a few corrections and additions in appendices at the end of volume 2. At the generic level there is little indication of the current allocation of most names, but a system of key numbers gives their general relationships. A problem here is that the occasional misspelled name, or possible typographical error in a number (hopefully there are few or none), will cause readers to overlook types until the promised third volume appears, arranging the types systematically. A geographic index would also be helpful, and might inspire further research.

Another problem will be the inevitable misreading of these volumes by the careless, even though the authors clearly agree with Bangs and Deignan that an author's original series are *all* cotypes or "syntypes." Bangs was particularly outspoken in his condemnation of "lectotypes" not mentioned in an original description, but Deignan and others also reject irresponsible subsequent "restrictions," even by the author himself (see for example Griscom 1937, Proc. Boston Soc. Nat. Hist. 41: 108). Griscom and Deignan recognize restrictions made for suitable reasons after proper research; and assuredly Warren and Harrison do not intend their mention of particular specimens to be misconstrued as irresponsible restrictions, either of lectotypes or of type localities. Their volumes tell us what names are represented by type material in the British Museum; they thus direct revisers to this material, which must be *examined* by the reviser who wishes to reach sound conclusions. The authors make no claim of having revised a large proportion of the birds of the world!—ALLAN R. PHILLIPS.

Handbuch der Vögel Mitteleuropas, Galliformes und Gruiformes.—Urs N. Glutz von Blotzheim, Kurt M. Bauer, and Einhard Bezzel. 1973. Frankfurt am Main, Akademische Verlagsgesellschaft. 700 pp., 5 pls., 100 text figs., 21 tables. 112 DM (subscription price 95 DM).—With the publication of this volume, the "Handbuch der Vögel Mitteleuropas" is close to the halfway point toward the original goal in just 7 years. The present volume follows the general scheme and coverage (see reviews, 1968, Auk 85: 522; 1970, Auk 87: 597; 1973, Auk 90: 216) with the same excellent standards as established in the earlier volumes. No need exists to repeat my general comments on this "Handbuch" or remarks on the problems of multivolumed sets, nor will I attempt to evaluate critically the material in each species account; these comments are better left to ornithologists familiar with the European avifauna and the biology of gruiforms and galliforms.

This volume treats only 28 species, of which 7 are accidental or exist in small introduced populations and covered only briefly. Only three species, *Gallinula chloropus*, *Lagopus mutus* and *L. lagopus*, occur naturally in North America, and one, *Phasianus colchicus*, has been introduced in Europe and North America. Thus, only one-fifth of the included information is of direct interest to students of North American birds.

The low rate of species coverage continues in this volume with a total of 169 species included in five volumes. Moreover, many of the species discussed in this volume have been covered in other excellent monographs. As expressed in earlier reviews, I hope that the same energy and care is devoted to groups of less well-known birds for which excellent monographs do not exist.

The difference between the single volume and subscription price should be noted. I would like to urge ornithologists to order the "Handbuch" for their institutional libraries while it may still be obtained at the lower subscription rates. This

work is an important review source for ornithologists working in many areas of avian biology and belongs in the library of every major ornithological center. I fear that the "Handbuch" has been priced out of the reach of most individuals, and hope that it is still within the budgets of libraries.

Publication of the "Handbuch" volumes continues at the same noteworthy speed and should be completed within a decade; I wish the authors every success in reaching their goal. Once again, ornithologists are indebted to Drs. Glutz von Blotzheim, Bauer, and Bezzel, and their co-workers for another excellent volume on central European birds.—WALTER J. BOCK.

The animal in its world.—Niko Tinbergen. 1972. Cambridge, Massachusetts, Harvard Univ. Press. 343 pp., 111 illus. Cloth. \$15.00.—The one book I have consistently assigned to students since beginning to teach ethology is Tinbergen's "Curious naturalists." It is a rich, insightful account of the aims, methods, and experiences of field ethologists, so evocative that even students who have never been in the field get a vivid impression of what it is like to practice this sort of biology. It is a book about science, but even more so about scientists.

Now a second volume is available that can serve with it, providing the finer detail missing from the stories of the first. "The animal in its world" is more about science than the scientists: it reprints 10 of Tinbergen's research publications. His writing style remains remarkably vivid, even while setting forth and tabulating procedures and results step-by-step, in all the necessary detail. If the earlier book is primarily about the spirit of ethology, this one is about the nuts and bolts as well.

The two books are most intimately related through the publication in "The animal in its world" of translations from the German originals of three major papers on digger wasp orientation and a broadly descriptive account of the courtship behavior of the grayling butterfly. These studies, and others related to them, were summarized in "Curious naturalists." Thus a student fascinated by, say, the learning processes in the "locality studies" made by the wasps, now has very ready access to the actual experimental results. These four papers illustrate a great range of experiments that can be done in the animals' natural environments, experiments that might be impractical under much more severely limited and unnatural conditions of the laboratory.

Where the earlier book gave naturalistic accounts of phalaropes, snow buntings, eiders, and black-headed gulls, the recent volume has a single chapter that is much more of a synthesis. A progress report on the display behavior of gulls, it is a detailed exercise in applying the comparative approach to behavioral studies. Tinbergen selected it in lieu of examples of his other "largely observational" work precisely because it shows the effect comparative procedures had on such work. The effort to explore the courses of adaptive divergence and convergence required a refinement of concepts and a perspective not well-developed in single-species projects. In addition this paper provides considerable insight into Tinbergen's views on the motivational causation and functions of display behavior, and the logic he employs in testing these concepts. His approach has provided the model for a great deal of work that has been done with bird displays, and both its values and its limitations are made apparent by the very detailed procedural reviews and examples developed here.

Five papers are concerned with behavioral and other adaptations to pressures of predation. Based on work by Tinbergen and his students on the habit of gulls (and other birds) of removing from the nest vicinity the empty eggshells from which chicks have hatched, these broaden into considerations of the integration of the

whole system of antipredator devices of a species. One study is in fact a "spin off" of the gull work, a demonstration that foxes cache eggs and recover some of their caches, along with a consideration of how the details of their caching behavior are adaptive. The final paper addresses the general question of why camouflaged organisms space themselves so far apart in nature, and presents experiments done on egg models showing how spacing affects the success of a visually-searching predator.

The clear, methodical sequences in which Tinbergen develops set after set of experiments in these papers are most instructive. No less so are his various comments on the results, e.g.: "the first indication that our interpretation had been in part incorrect came from the results of this experiment" (p. 269), or "this was the first indication of a fact which became increasingly clear as the work proceeded, viz. that we were not measuring the direct expression of the 'releasing mechanism' of just the removal response, but rather the effect of the interaction of this response with, or its dominance over, a variety of other response" (p. 276). This is a book to show students the complexities and implications of experiments, and with which to teach them how to frame "natural" questions and seek the answers in natural environments.

Much of Tinbergen's work has been with birds, but behavior is his main interest and he has, in his own words, "browsed, so to speak, in a number of habitats." He has been entirely ready to study butterflies in order to broaden the scope of working hypotheses developed primarily with birds. And in studying birds, fishes, insects, and mammals the behavioral topics he and his students have explored are all of fundamental concern to ornithologists. Thus, although just half the papers in this book take birds as their subjects, all are on such basic themes as homing, hoarding, spacing, predation, and adaptiveness, and ornithological ethologists will find much of use. They should also find the breadth stimulating, and be encouraged by Tinbergen's advice to indulge in "periods of exploratory, intuitive observation . . . when one feels in danger of getting out of touch with the natural phenomena; of narrowing one's field of vision." After all, he has confirmed (p. 327) that even foxes are wise not to put all their eggs in one basket.—W. JOHN SMITH.

The exploitation system of the Yellow-billed Magpie—Nicolaas A. M. Verbeek. 1973. Univ. California Publ. Zool. 99. 57 pp., 19 figs., 11 tables, 1 appendix. Paper. \$2.50.—The family Corvidae offers fertile ground to investigators interested in unraveling the complexities associated with reproductive strategies and social organization as they relate to ecological and evolutionary parameters. The social groups are not usually exceptionally large, and many species are permanent residents. Beginning with the pioneering works of K. Lorenz, the study of social behavior of corvids has gradually increased in tempo and diversity as attested to by the large number of scientists now investigating various aspects of the life histories and social behavior of members of this family. One has the feeling that in the near future we will pass from the *alpha*-level of research wherein each species' habitat is defined, breeding biology characterized, and yearly cycle understood, to a higher level wherein these characteristics are used in a comparative sense. This synthesis may well point up some fascinating evolutionary pathways that have led to the wide variety of socioeconomic life styles seen in corvids.

The present study makes a definite contribution to our knowledge at the *alpha*-level and a worthy attempt at synthesis. The Yellow-billed Magpie (*Pica nuttalli*), a little known and highly stenotopic species, has been largely ignored since Linds-

dale's studies in the 1930s. Verbeek has done an excellent job of characterizing the annual cycle and breeding biology of this species in succinct fashion. This relatively short University of California Publication in Zoology is loaded with original data. It is well-referenced with many non-English work cited. The conceptual approach taken, to understand the "exploitation system" of *P. nuttalli*, is an extremely profitable one when used on a readily accessible species and the length of study is not a deterrent. The author defines the "exploitation system" as the time and energy requisites that "shape the behavioral system" of the organism. Within the categories of energy, time, and behavior the author lists a multitude of factors that need be investigated, including pertinent habitat characteristics such as productivity, abundance, and distribution of food, and important population parameters such as mating system, movements, territory, clutch size, etc. These factors all act in concert to mold the exploitation system of the species. The reader is soon told, however, that this publication deals primarily with the behavioral aspects of the exploitation system and one must look elsewhere (Verbeek 1972, *Auk* 89: 567-582) for detailed information on time utilization and food supply. Thus, the very basis of the exploitation system must be searched for in a separate publication.

This work deals primarily with the breeding biology including information on mating system, territory, courtship and copulation, nests, incubation, life expectancy, and fledgling survival. Other important sections deal with flocking and roosting patterns.

This study, as all complete studies of this nature must, covered a considerable period of time during which the author spent 740 days afield. Unfortunately, a total of only nine birds was color-banded and nests were not inspected to determine exact time of egg-laying and clutch size. These deficiencies pose some serious problems in drawing conclusions about population parameters and movements of birds, especially in terms of dispersal and recruitment of yearlings.

Yellow-billed Magpies mate for life, nest in loose colonies, and pairs maintain a territory throughout the year. The size of the territory and degree of exclusiveness vary with the phase of the annual cycle, being smallest and least exclusive in the postreproductive period and largest and most exclusive during fall and early winter when resident pairs spend considerable time on the territory. The huge nests, initiated in March, are about 70 times the weight of the bird and take 6 to 8 weeks to complete. Eggs are not laid in the nest for another 10 days while the birds recuperate and the female builds up energy for egg production. Courtship begging by the female does not commence until immediately before the first egg is laid. This is unusual, as courtship feeding in most corvids starts well before the egg-laying period and possibly serves two important functions: to provide energy for egg formation and to establish and then strengthen the male's reliability as a provider during incubation and the early nestling period. The female magpie is attentive 92% of the day and receives most of her food from the male.

Although egg-laying in the colony appears synchronized the author does not believe social stimulation plays a role. He mentions, instead, an undefined environmental timer, but in 1972 he cites food abundance and ambient temperature as influencing the time of nesting.

A major point in this study is the role of the territory in the life of the magpie. Territorial defense is performed in the autumn and little time is devoted to it in the spring during nest building. A very clear picture of territory as a source of food for the adults and young is presented in Table 7 and Figure 11. Throughout the incubation and early nestling period the male obtains progressively more food

off the territory and as time passes flies farther from the nest. Later the male reverts to feeding on the territory whereas the female now obtains a greater share of food for herself and the nestlings off the territory. The author believes this occurs because the male initiates molt before the female and he is able to conserve more energy at the onset of molt by feeding on the territory. The author concludes that the loose colonies form at some average position in relationship to the location of a transient and unpredictable food supply. No mention is made of local permanent features of the habitat that may attract potential breeding birds. The idea that nest dispersion in loose colonies is a mechanism to avoid predators is discounted even though Figure 12 shows that about 60% of all accipiter attacks occur during the period magpies defend their territories most vigorously. The territory thus serves as an exclusive area for nesting and as a secondary source of food should major sources of food on the home range fail.

The breeding season of the magpie is timed to coincide with the maximum production of insect food for the nestlings, and the data support this statement. The 1972 publication noted that acorns are stored during 3 fall months, but this event is not mentioned, nor are we given a clue as to how or when this food source is utilized. In any event, it is refreshing to see a study in which the food base has been sampled.

The publication concludes with an interesting discussion comparing the exploitation system of the magpie to those of the Scrub Jay and several other corvids.

Both the magpie and Scrub Jay in coastal California molt during a period of reduced food abundance, but adult and juvenile Scrub Jays overlap in their time of molt whereas adult and juvenile magpies hardly do so. Adult magpies required 4.5 months to complete molt but Scrub Jays only about 2.5 months. The author concludes that these interspecific differences are related to the Scrub Jay's greater foraging plasticity than that of the magpie. One wonders if size may not play a role here.

The author has tabulated the habitat and pattern of nest dispersion for 29 species of corvids (Table 11). Solitary nesting is most common overall and occurs most frequently in forests, deserts, and woodlands where food is assumed to be more or less evenly dispersed. Colonial nesting occurs in habitats where food is locally abundant and loosely colonial nesting occurs when food is locally abundant but sparsely distributed. These assumptions on the distribution of food per habitat type have not been tested to date and are prime research topics for future investigations. The major weakness of the discussion is in some of the broad generalities used to develop an overall ecological viewpoint of sociality in corvids. Many of these generalities are based on lack of suitable information for many species and will probably not hold under rigorous field examination. For example, "continued dependence of fledglings on parents is difficult in a flock situation." Yet this does not preclude its occurrence, but means parent-young recognition must be exacting, as possibly occurs in Piñon Jays, Steller's Jays, and Clark's Nutcrackers that do flock with dependent young. "The timing of flocking thus coincides with that time of year when food conditions are severe," this certainly does not hold for flocks of jays harvesting a bumper crop of pine seeds or acorns. "Corvids that gather in large flocks to feed or roost are *all* [*italics mine*] species that inhabit open country." This statement does not apply to some winter roosts of crows, nutcrackers, Piñon Jays, Steller's Jays, and Scrub Jays.

Verbeek's attempt to relate the degree of sociality and cooperative breeding to general habitat types is less convincing than the relationship he hypothesizes for

increased sociality with an unpredictable distribution and abundance of food. Verbeek seems unaware of the temporally and spatially unpredictable production of cones by conifers that should (and does) result in highly developed social schemes in some coniferous forest-dependent corvids. Unfortunately terms such as forest, woodland, and desert cannot always be used to imply a particular pattern of resource distribution, dependability, or seasonality. This is especially true for the coniferous forests and deserts of North America, which cover large geographic areas and exist under a wide range of environmental conditions.

It may be that we simply do not know enough appropriate *alpha* biology at this time to be able to draw *gamma* conclusions. The above points are not meant as criticisms to weaken the overall value of this work, or the ideas presented, but simply as a caution to proceed with care when setting up generalized ecological categories to explain complex social behavioral patterns.

I highly recommend this information-packed publication for biologists with a wide and varied range of interests. The "exploitation system" approach is well worth exploring by the ecologists, the breeding biology information is of interest to many ornithologists, and the discussion good "food for thought" for scientists interested in social systems.—RUSSELL P. BALDA.

Grouse and quails of North America.—Paul A. Johnsgard. 1973. Lincoln, Univ. Nebraska Press. xx + 553 pp., 52 colored and 88 black-and-white pls., 45 figs., 30 tables. \$25.00.—In this handsome and scholarly volume Johnsgard presents interestingly written accounts of the biology and behavior of the 9 species of grouse, 14 quails, and 2 introduced partridges that occur in North America north of the boundary between Mexico and Guatemala. The striking contrast between the ecological and behavioral adaptations of the relatively closely related grouse and quail aroused Johnsgard's interest as an ethologist and was one of the motives for the present book. The two established introduced partridges (Chukar and Gray Partridges) were included because they offered some interesting comparisons with native species.

The main part of the book is organized in two sections: "Comparative biology" and "Accounts of individual species." An introduction lays the groundwork for the discussion of zoogeographical and evolutionary relationships of the American grouse and quail. A key to identification, a short section on name derivations, 35 pages of references to the literature, and an index to each occurrence in the text of vernacular or scientific names of species round out the book. Each species account is accompanied by a map showing the current distribution of that species in adequate detail. The plates are an attractive feature of the book and an instructive adjunct to the sections on description and behavior. The colored plates are chiefly excellent photographs but include fine paintings by C. G. Pritchard, John O'Neill, Dexter Landau and one unpublished picture of a hybrid between a Scaled Quail and a Gambel's Quail by Louis Agassiz Fuertes.

In the chapter on "Evolution and taxonomy" in the first section, North American fossil grouse and quail are listed and discussed with regard to possible derivation from cracidlike ancestors during midtertiary times. Johnsgard thinks North America may be the evolutionary center of grouse as it has a greater number of genera as well as more endemic genera than Eurasia. *Dendragapus* and *Lagopus* are considered nearest the ancestral types of grouse, and *Centrocercus* and *Tympanuchus* the most highly specialized. That the New World quails originated in Middle America is supported by the fact that most of the genera occur there today, including the

tree-dwelling, forest-adapted, primitive, long-tailed *Dendrortyx* which is thought to be nearest to the ancestral type. The author follows the recent trend in avian systematics in including all of the grouse and quail in the family Phasianidae and in combining several genera that until recently have been considered distinct.

Species are tabulated according to zoogeographical areas and major plant community types with which they are most closely associated. The table clearly indicates the wide variety of tropical and arid-temperate community types occupied by New World quails as well as the segregation of the North American grouse within arctic and temperate communities. The only ecological overlap between grouse and quail indicated by the table is between the Greater Prairie Chicken and the Bobwhite, and Johnsgard observed that these species exhibit marked niche differences where they overlap. It appears to me from studying the distribution maps that there are other overlaps as well, such as between the Ruffed Grouse and Bobwhite in the eastern United States and between the Blue Grouse and Mountain Quail in the west.

In a map of "Distribution of major natural vegetation communities in North America" it is surprising to note that what I consider the quite distinct southeastern evergreen forest and the northeastern hardwood-conifer forest are shown by the same symbol labeled "mixed coniferous-deciduous forest." Certainly there are profound ecological differences as well as differences in the grouse and quail species that are present in these two areas. Despite this problem I found this broad ecological approach to the subject of distribution of grouse and quail quite illuminating and an excellent background for understanding the more detailed discussions of distribution and habitat differences that follow in the species accounts.

The subject of "hybridization" is treated at considerable length because of its importance in the evolution of species and in indicating the degree of genetic difference between the parental types. The author considers that the presence or absence of natural hybridization between closely related forms occurring in the same habitat may provide a clue to the degree of niche overlap and interspecific competition for habitat resources. It appears that the grouse and quails of North America exhibit a considerable tendency to hybridize, even between species belonging to seemingly different genera. All North American genera of grouse (as recognized by the author) have been involved in intergeneric hybridization except *Bonasa* and *Centrocerus*. Considerable evidence of hybridization between species and genera of quails is recorded in the book, including the results of laboratory experiments by the author.

Johnsgard believes that in monogamous birds, such as most quail, the sex ratio for most efficient reproduction should be as near 1:1 as possible, whereas in promiscuous or polygamous species a sex ratio strongly favoring females is most efficient. All grouse and quail, except Sage and Blue Grouse, although having nearly equal numbers of each sex at hatching, diverge to ratios favoring males in adult populations. Johnsgard suggests that a slight excess of males in reneating species such as quails may be useful to fertilize females whose mates have already reached postbreeding condition. On the other hand, he sees no value in excess males for polygamous or promiscuous species, suggesting that they may be selectively harvested without significantly reducing the population's reproduction potential. Farther along in the book, in discussing breeding behavior of grouse, Johnsgard claims a need for multiple males in a lek to increase the breeding efficiency of the dominant male. To me this suggests the possibility that excess males in the population may have usefulness.

The points of similarity and difference in breeding behavior and associated vocalizations and recognition marks of grouse, New World quails, and Old World pheasants and partridges are discussed in detail. The aggressive, territorial breeding behavior with emphasis on visual and nonvocal recognition signs of grouse are strikingly different from the nonaggressive flocking behavior and emphasis on vocal recognition signs in New World quails.

A chapter of the book is devoted to the hunting and recreational values of grouse and quail. It is noted that Ruffed Grouse are hunted in more states and provinces of the United States and Canada than any other grouse or quail and that more of this species are harvested (3,700,000) than any other grouse. The Bobwhite makes up 70% (35,000,000) of the total harvest of all grouse and quail in the United States and Canada. The introduced Gray Partridge now ranks third (behind the Ruffed Grouse and Bobwhite) among the most important sporting birds of this group in terms of harvest.

In evaluating the factors affecting the survival of the gallinaceous birds, the author rightly considers that hunting, as currently controlled in North America, is not a hazard to any of these species. On the other hand, environment, including breeding habitat and winter food and cover is most important. The recently added hazards of environmental pollutants, particularly organic mercury fungicides, must now be considered important in this regard. Johnsgard strikes a warning note regarding the effect of habitat loss on the prairie chickens and Sage Grouse. He cites particularly the rapid disappearance of the Greater Prairie Chicken from one state after another and the likelihood that the Lesser Prairie Chicken and Attwater's Prairie Chicken may soon follow their conspecific relative, the Heath Hen, into extinction.

Throughout his book, Johnsgard's lucid expression of the complicated comparative biology and ethology of his subject species has added greatly to the pleasure of its reading. Although he disclaims adding much new information on grouse and quail, he has certainly done a fine job in extracting and organizing existing information in a meaningful, appropriate, and attractive fashion.—JOHN W. ALDRICH.

Inter-island variation in the Mascarene White-eye *Zosterops borbonica*.—Frank B. Gill. 1973. A.O.U. Ornithol. Monogr. No. 12, Pp. vi + 66, 1 col. pl., 31 figs. \$2.00.—This is the latest and shortest to date of the A.O.U. Ornithological Monographs series. It describes variation in a small passerine on 1,000-square mile, topographically and vegetationally diverse Reunion Island in the western Indian Ocean. The variation in *Zosterops borbonica*, which is restricted to the Mascarene islands of Mauritius and Reunion, is extensive, involving several plumage and mensural characters. Contrary to the author's prior (Storer and Gill 1966, Occ. Pap., Mus. Zool. Univ. Michigan No. 648) recognition of four subspecies, including two newly described therein, Gill now advocates treatment of the forms on Reunion as morphs or other variants of one polymorphic subspecies, *Z. b. borbonica* (thus following Moreau 1967, Zosteropidae. Pp. 326–327 in Check-list of birds of the world, vol. 12 (R. A. Paynter, Jr., Ed.), Cambridge, Massachusetts, Mus. Comp. Zool.), rather than as separate species. It is unfortunate that additional names were added prematurely to an already overburdened nomenclature, particularly as Storer and Gill had indicated that the study would be continued.

Five morphotypes are discussed: a gray morph of the central highlands and slopes, *Z. b. edwardnewtoni* Hartlaub in Storer and Gill 1966; a gray-headed brown morph of the northern and northeastern lowlands, *Z. b. borbonica* (Gmelin) in

that earlier paper; a brown-headed brown morph of the westcentral highland forests *Z. b. alopekion* Storer and Gill; a paler, brown-headed brown morph of the dry western lowlands, *Z. b. xerophila* Storer and Gill; and a brown-naped brown morph of the southern lowlands and slopes, with no scientific name assigned. These morphs interbreed to varying extents, with topographical factors acting to limit or prevent gene flow among them. The clinal shift in proportions of either the eastern (northeastern) or western brown morph to the predominantly gray morph along the highland slopes is abrupt, occurring over a distance of 7 km or less. Other steep clines exist among the various brown morphs, although a broader zone, in which occur some intermediates as well as "pures" of both morphs, is found between brown-headed and gray-headed brown morphs on the eastern slopes of the highlands.

It is noteworthy that between 2 and 12% of Gill's specimens were variously intermediate between the gray (i.e. gray-backed) and the brown (i.e. brown-backed, including all four such morphs) morphs. About 45% of specimens representing the brown morphs were intermediate in head color, that is, were intermediate between the gray-headed brown morph and either the highland brown-headed or the gray-naped brown morph. Most of the intermediates among various brown morphs were obtained in zones where a shift in morphs occurs. However, the brown-naped brown morph, itself intermediate between the gray-headed and brown-headed brown morphs, appears to represent a somewhat stable situation. Gill notes that parental phenotypes of the brown-headed and gray-headed brown morphs in their narrow "hybrid zone" may compose over 50% of the hybridizing populations, suggesting partial reproductive isolation. Until we know more about the genetic control of what appears to be a single character (controlled by several alleles plus modifiers, see below), this unlikely possibility cannot be assessed. His designation of five basic morphotypes should not lead us to discount the considerable gene exchange among morphs, and we should bear in mind that even a 1 or 2% phenotypic occurrence of a trait implies significant gene flow.

Color differences are the result of the presence or absence and the extent of phaeomelanins dorsally, and eumelanins ventrally. Genetic control of these factors would seem to be relatively simple, and indeed Gill finds evidence for a single allelic control, with modifiers, of the basic brown-gray morph coloration. There is some correlated, mainly altitudinal variation in mensural characters in the morphs, involving for example wing length and bill length.

A gap in the report is its failure to place in perspective the racial variation in *Z. borbonica*. The Mauritius form *Z. b. mauritiana*, is largely ignored in this paper—with the erecting and discarding of subspecies in which the author has indulged, one would expect a clear comparison (there are comparative data on *mauritiana* in Storer and Gill 1966, based on study of 13 specimens from 4 locations; Reunion's 5 morphs were represented by 759 specimens from 76 localities). Although Gill now advocates treatment of all Reunion forms as consubspecific, he concedes that arguments exist for maintaining two subspecies, which he would call *Z. b. borbonica* and *Z. b. xerophila*. Anyone choosing to follow this latter course should consider the nomenclature problem involving *xerophila* versus *edwardnewtoni* as the correct name for the western populations on Reunion.

No really convincing evidence is presented to demonstrate that any of the morphs on Reunion has evolved very recently, although Gill suggests differentiation within 250 years. Some of the gradient populations may have been very restricted in their past distributions; after man began to exploit the island's woodlands, the birds may have dispersed laterally on the slopes, giving rise to other intermediate level

populations retaining their ancestral characteristics. Other aspects of the author's hypothetical evolutionary history of *Z. borbonica* seem convincing, including evolution of all but one morph (the southern brown-naped brown morph, possibly of hybrid origin) as geographical isolates.

This is an interesting report, appealing to taxonomists, population ecologists, and biogeographers. A color plate by W. A. Lunk depicting four of the morphs (those four designated as races by Storer and Gill 1966), adds to its attractiveness.—LESTER L. SHORT.

Words for birds: a lexicon of North American birds with biographical notes.—Edward S. Gruson. 1973. New York, Quadrangle Books. xiv + 305 pp., 238 marginal illustrations after Alexander Wilson. \$8.95.—This odd book has received several favorable reviews, and I think I know why. The reviewers were praising the *concept*, and didn't read the book itself very carefully. There are few things in the book world more discouraging than the mediocre execution of a brilliant concept, not only because of the disappointment inherent in the existence of the unsatisfactory book, but also because this existence may, in effect, kill the market so that no publisher will want to risk a second, similar book even if the latter were all that the first one *should* have been.

The dust jacket calls this book "An ornithological, etymological, biographical and historical guide to 800 North American birds, including: the origins of their common English names and scientific names (including some howling misnomers); the bizarre bird lovers who discovered them, thought they discovered them, named them, misnamed them, or, through no fault of their own, had birds named after them." Only one item in this list is effectively covered—persons after whom birds were named. There are biographies, ranging from a few lines to three pages or more, of all persons whose names appear in either the English or scientific nomenclature of North American (including accidental and Hawaiian) birds. I am not the first to note that there is a major lacuna in the biographical treatment: *why* were warblers named for Blackburn and Kirtland, flycatchers for Hammond and Wright, etc.? This information is deliberately omitted by Gruson, who states (p. xiv): "The reasons [for naming a bird in someone's honor] are not sufficiently varied or interesting [to me] to link the designator, designee and the bird." Gruson's lack of interest in this half of eponymy has robbed his book of a potential asset, although he occasionally slips and *does* tell us why Virginia's Warbler and a few others were so named.

Gruson's criterion for inclusion of a species was its listing in Reilly's "Audubon illustrated handbook of American birds." This results in the anomalous inclusion of biographies of about a page each for John Reeves and Samuel Thomas von Soemmerring, thanks to *Syrmaticus reevesi* and *S. soemmerringi* having been *unsuccessfully* introduced to the Hawaiian Islands (Berger 1972, Hawaiian birdlife:248).

There is no doubt that the author worked hard and had fun in compiling his biographies. The inadequacy of the remainder of the material is thus all the more evident. Gruson's ignorance of ornithological facts leaps out from page after page. The Falcated Teal is not so named for "the shape of the species' claws" but for the elongated sickle-shaped tertials of the male. The call from which chachalacas take their name is hardly a "chicken-like cackle." The White-tailed Ptarmigan is not so called because of the color of the tail in "its winter plumage." It is not the tail of the Peafowl "which is so prominent" (yes, Virginia, the Peafowl is a North American bird!). Guineafowl are not "endemic to West Africa." Purple is not a

"misnomer for the brown back of the [Purple Sandpiper] in breeding plumage" but a description of the gloss of the dorsum in winter. The specific name *asiatica* of the White-winged Dove is a misnomer (a "howler" that Gruson missed), not "a reference to the species' range in India" (one of Gruson's own innumerable "howlers"). According to Gruson, the name Cave Swallow is more likely to be suggested by "the shape of the nests, which resemble small caves" than by the breeding site. And, believe it or not, the name Grasshopper Sparrow "refers to the species' greater intake of insects than most sparrows." As the great comedienne Anna Russell said during her explanation of the plot of the "Ring" cycle, "I'm *not* making this up, you know!"

Gruson's explanation of the generic name *Gymnorhinus* perhaps typifies the author's ornithological, etymological and stylistic incompetence: "Greek for 'naked-nosed,' formed from *gymnos*, 'naked,' and *rhinos*, 'nose.' The bill in this species is proportionately longer [than what? Shades of TV commercials!] and, by a stretch of the imagination, therefore, could be considered somewhat naked, but a poor description." I would prefer to have a lexicon of bird names written by somebody who is aware that the Piñon Jay, *Gymnorhinus*, lacks the nasal bristles typical of most Corvidae.

The instances of ornithological ignorance given above are but samples. There are other categories of incompetence as well. One might expect that the author, in view of his interest in the past, would get his history straight, but he derives the generic name *Pinguinus* as "A new Latinism from 'penguin.' Early visitors to northern North America took these flightless birds for penguins and so named them." The name, of course, was *first* applied to the Great Auk and later to the superficially similar flightless birds of the Southern Hemisphere. Gruson gives only one derivation for the word "penguin" itself, although this is considered the least likely of the three possibilities discussed by Newton and Gadow (1896, Dictionary of birds: 703). Gruson does not appear to realize that European birds received English names long before American birds did. Thus he states of the Little Egret (*Egretta garzetta*) of the Old World: "Little is used to distinguish this species from the Snowy Egret, which it closely resembles." It does indeed resemble, but is *larger than* the Snowy Egret; it is, however, smaller than the other Old World species of *Egretta*. Similarly, Gruson writes of the Long-toed Stint (*Erolia subminuta*): "The legs and toes of this [Old World] species are much longer than those of the [New World] Least Sandpiper, hence the common name."

Gruson seems unaware that a genus may contain species other than North American. Under the Green Jay, he says of *Cyanocorax* "Greek for 'blue raven' and formed from *kyanos*, 'blue,' and *korax*, 'raven.' The species is predominately green and yellow, with a head of light cobalt-ultramarine." Needless to say, the coiner of the name *Cyanocorax* did not have the Green Jay in mind. On the same page, Gruson similarly confuses genus and species in *Cissilopha*, the single North American species being *C. sanblasiana* (which he spells in the obsolete hyphenated form). He gives the derivation of the generic name from the Greek *kissa*, "magpie," and *lophos*, "crest." In a typical Grusonian bit of sarcasm, he then (still under the generic name) states "The species lacks a crest." As it happens, *sanblasiana* is indeed the type species of the genus *Cissilopha*, but unfortunately for Gruson's attempt at humor, the species *has* a distinct crest. In at least one place Gruson uses the word "species" for half a family; under Wagtails and Pipits, Motacillidae, he states "Wagtail is just what this species does."

The inaccuracies listed above are selected from a list of more than 70 that caught my eye as I read through the book. Typographical errors are also far too abundant to list completely; I will mention only the fate of the poor Brown Pelican, who has become *Pelecanus accidentalis*.

Gruson expects not only the English but the scientific name to be "helpful," whatever that may mean. After giving the derivation of the Whimbrel's name *phaeopus* from the Greek for "gray-footed," he states "Not particularly helpful, since the legs of the long-billed curlew are the same grayish-green as those of this species." This, of course, overlooks the fact that the name *phaeopus* was given to an Old World form not sympatric with the Long-billed Curlew—even if it mattered. Physical characteristics are often called "field marks," whether or not appropriately. Thus among the hummingbirds, *platycercus* is translated as "broad-tailed," "a reference to the [sic] field mark." However, *latirostris*, "broad-billed," is "not particularly descriptive or useful." Gruson's writing is sometimes so inept that a *word* becomes a "field mark;" thus "Redhead describes the head of the species but is not a sufficient field mark." Even minimal editing might have eliminated such literary infelicities as "Barred is a reference to the bars of alternating brown-black and white bars across the back, head and underparts of the species."

One of the most grotesque descriptions in the book is that of the Pectoral Sandpiper, "so called for the male's inflatable sacs which are used for courtship display and calling, and which, when not in use, hang limp but apparent across the breast of the species." What a mental image *that* calls up!

I trust that this sample (and it is only a sample) of the text will suffice to demonstrate its overwhelming shortcomings. The format of the book itself is an additional insult to anyone unwise enough to have paid nine dollars to own it. Barely more than half the width of the page (3 1/8" out of 6") is occupied by the type bed. The huge margins are utilized on most pages for mini-reproductions in black and white of illustrations from Alexander Wilson's "American ornithology." These have sometimes been sawed up in strange ways. The illustration of the Pintail includes not only the central figure, but the bill of the common Merganser, the top 2/3 of the Blue-winged Teal (shown intact on the facing page), and the headless front half of the Snow Goose. Wilson's drawings are so crude that they deserve to be laid away in the archives of ornithological iconography as historical curiosities. The publishers, however, undoubtedly reasoned that people expect bird pictures in a bird book, and the Wilson drawings are, no doubt, in the public domain.

The high standards of the New York Times have been an article of faith for me for so long that I find it hard to believe that Quadrangle is the book publishing arm of the Times. I would like to believe that "Words for birds" was an ill-advised departure from these high standards, not to be repeated. I still hope somebody *will* do a competent lexicon of bird names, but this one is best quietly forgotten.—KENNETH C. PARKES.

Curassows and related birds.—Jean Delacour and Dean Amadon. 1973. New York, Amer. Mus. Nat. Hist. xv + 247 pp., 30 col. pls., 69 drawings, 15 maps, 13 photos. \$20.00.—To contemplate the appearance of a new book dealing for the first time with an exhaustive coverage of an entire avian family is to evoke an excitement that is all too rare an occurrence for most ornithologists. This excitement is enhanced when the bird group is one of the least studied and yet, evolutionarily speaking, most significant of the galliform families, and when the authors are as well known and highly respected as Delacour and Amadon. Anticipation reaches its apogee when the contributing artists are as competent as Albert E. Gilbert, George M. Sutton, and David Reid-Henry. After reading the book, one may truly say it has been worth the wait.

The artwork demands to be considered first, for it is this which initially dazzles the senses. A combination of large (9 × 12") page format, high quality paper, and a superb job of color printing provides the vehicle for a truly stunning visual treat. In spite of the fact that the cracids are described by artist Gilbert as "somber-toned" birds, he managed to portray them with a technicolor brilliance, aided in large part by the choice of appropriate associated vegetation, especially bromeliads. In most of his plates (and in my opinion the most effective ones) the background is left white, while in a few the forest canopy or interior is realistically depicted. Field sketches and photographic records made during three field expeditions allowed for this extraordinarily accurate vegetational setting for the birds. The birds themselves are depicted similarly well. I have compared several of his paintings with color photos I have taken of captive birds, and convinced myself that in posture, plumage details and soft part colors it is hard to find serious fault with Gilbert's plates. My photos of *Penelopina nigra* suggest a grayer and less conspicuously patterned female plumage than he has shown, but the male is close to perfect. I consider Gilbert's plate of cracid chicks one of the most interesting and valuable of all. I have looked in the past without success for color renditions of the natal plumages of various Cracidae, and was delighted that the young of seven species (including one by G. M. Sutton) should be included. Not only are they valuable for showing intrafamilial variation in down patterns, but all of them also illustrate portions of the highly distinctive "juvenal" plumages of this group. Not only do juvenile cracids lack the distinctive whitish shaft-streaks typical of other New World Galliformes, but also, at least in *Crax* and *Penelopina*, sexual dimorphism may appear with the first pennaceous plumage. Kenneth Parkes contributed some comments in the section on plumage and molt on the apparent virtual suppression of a typical galliform juvenal plumage in cracids, but the problem is certainly worthy of additional attention. Comparison with the situation in megapodes is also obviously in order.

The four plates by G. M. Sutton are in his characteristic soft portrait style and, while lacking the high color saturation and feather detail of Gilbert's plates, have a distinctive charm of their own. The presumably extinct White-winged Guan is effectively illustrated by David Reid-Henry, on the basis of one of the three known specimens. All told, adults of all of the 44 species recognized by the authors are illustrated in color, and both sexes are illustrated in species having marked sexual dimorphism. And in addition to the numerous labelled figures by Gilbert, his decorative head drawings and field sketches pepper the open space of the book in a most delightful way. This is no doubt a reflection of the fact that he was able to help design the book, a prerogative that few artists are able to enjoy. With the appearance of this book, Gilbert has certainly established himself in the front ranks of our American bird artists, and the American Museum of Natural History must indeed be proud of having produced such a visually satisfying book.

The text by Delacour and Amadon is divided, in the manner of several recent monographs, into a preliminary section on comparative biology and second section dealing with individual species accounts. It is not made clear as to the relative contributions of the two authors, but one suspects from the organization and content that Amadon did most of the writing. The contributions of Charles Vaurie are also evident throughout. Originally invited to be a third author, Vaurie's distributional and taxonomic work has already been published in a series of preliminary *Novitates* papers and a museum bulletin (1968, 138: 131-259). Thus the specimen measurements and distribution maps are generally taken directly from Vaurie's studies, with minor modifications resulting from new distributional information or different taxonomic interpretations of generic and specific limits.

In the section dealing with comparative biology, the authors summarize information on the evolutionary relationships within the Cracidae and comment on the position of the cracids within the Galliformes. There is a chapter on general behavioral characteristics and "habits," one each on plumage and molt, on wattles and other male display features, on tracheal variations, on aviculture and conservation, and three chapters on reproductive behavior. A final chapter is a summary of field notes made by Amadon during a Venezuelan field trip, intended to portray a feeling for the joys and frustrations of trying to observe cracids in their native habitats.

The authors' taxonomic treatment is essentially that proposed by Vaurie, with the exception of a few genera (*Pipile*, *Mitu*, *Pauxi*) that are not recognized, and a number of differences in species limits, especially in the chachalaca genus *Ortalis*. In both treatments the chachalacas are listed first and are now regarded by Delacour and Amadon as the most primitive, the guans are next, and included in the same tribe (Penelopini). The curassows represent the opposite end of the family and are recognized as a second tribe Cracini. Unlike Vaurie, who erected a special tribe for the monotypic Horned Guan (*Oreophasis*), Delacour and Amadon include the species within the Penelopini. As admitted by the authors, one could also argue that the highly crested, arboreal, and ornamented curassows are actually the more primitive, and that the duller, uncrested and more terrestrial chachalacas are the derived type. Indeed, it is suggested that the ancestral Cracidae were arboreal rather than terrestrial. It is further interesting that in curassows only the female broods the chicks and does not regurgitate food, while in guans and chachalacas both sexes care for the young and regurgitation does occur.

Separate chapters deal with reproductive behavior in the chachalaca, guan, and curassow groups. Interestingly, in spite of the abundance of cracid crests, wattles, knobs, and other male display features, the authors believe that monogamy is the rule in all the Cracidae, suggesting that these diverse structural characteristics are the product of selection for species recognition rather than the result of sexual selection. Considering the high degree of allopatry within congeneric taxa, this poses difficult problems. The authors suggest that sympatry of congeners is relatively prevalent in Penelope, but also occurs in *Crax* (if considered *sensu lato*). And yet, the seven allopatric species of *Crax* (*rubra*) show a remarkable variation in male soft part color and shape, which fit no clear-cut pattern of satisfying possible needs for reproductive isolation. Armchair ethology will apparently not solve such problems, and comparative studies on behavior and vocalizations are certainly needed.

A useful review of differences in tracheal anatomy and associated vocalizations is presented; this section was one of the first that I read in detail. Structural sexual dimorphism is found in the trachea of both chachalacas and curassows. Yet in the guans, there is little or no sexual dimorphism present, and the trachea shows great interspecific variation in the degree of its elongation. The authors are unable to decide whether the associated sounds are strictly of syringeal origin and as such are resonated only by the trachea, or whether adjunct "air sacs" might be involved. They suggest that in the bushy-crested curassows (*Crax*, *sensu stricto*) some inflection of the neck does occur during booming, and perhaps the esophagus provides a resonating chamber that supplements or substitutes for the relatively short tracheal loops in these species. Two species of this group lack booming calls and exhibit only slightly looped tracheas; these two (Wattled and Yellow-knobbed) have prolonged whistling notes. Yet even in the Wattled Curassow the male's tracheal length is reported as 390 mm long (the lengths of species having more strongly looped tracheae are not reported), which could resonate sound frequencies of less than 1000 Hz. Spectrograms presented by the authors for the "booming" species of *Crax* suggest that fundamental

frequencies of perhaps as low as 100 Hz may be produced in these forms. It seems unlikely that, even if it acted acoustically like a closed-pipe instrument, the trachea of such species could be long enough to resonate these frequencies, and thus an adjunct resonating chamber is presumably present. Hopefully the appearance of the book will stimulate somebody to analyze cracid vocalizations and tracheal anatomy more closely.

The sections dealing with separate species accounts are preceded by keys to genera and species (derived from those by Vaurie); a key to the tribes and supergenera is indicated but was seemingly inadvertently omitted. Each species account includes a statement of range and description, and a narrative account of "habits," nesting, and records of the species in captivity when appropriate. These are generally interestingly written, and include extensive quotations from published accounts or unpublished observations.

A final section provides a reference to original citations for scientific names, a glossary for determining the meanings of both scientific and vernacular names, and a bibliography with approximately 400 abbreviated literature citations or other sources. Regrettably, there is no index.

All told, the book represents a happy mesh of authoritative writing, superb artistic talents, and excellent book production techniques. It is easily worth its price, and since it has been produced in a limited edition, interested purchasers should order the book soon. Incidentally, the proceeds on the book go to the American Museum of Natural History, since the two authors have contributed their work. When ordered from the museum by mail, an extra dollar should be included for postage and handling.—PAUL A. JOHNSGARD.

Handbook of California birds.—Vinson Brown, Henry G. Weston, Jr., and Jerry Buzzell. 1973. Second rev. ed. Healdsburg, California, Naturegraph Publ. 224 pp. Illustrated by Jerry Buzzell. 66 col. pls., 3 maps, numerous vignettes, diagrams, and photos. \$5.95 (paper), \$8.95 (cloth).—California, with the largest human population and one of the largest and most varied avifaunas of any state, would benefit greatly from a first-rate field guide similar to R. T. Peterson's "A field guide to the birds of Texas." The volume under review attempts to fill this need but falls far short of doing so.

Several features of the "Handbook" are innovations. The order of species is based primarily on external morphology rather than on phylogeny in order to facilitate field identification. Thus, the mergansers follow the loons, the species of *Accipiter* are removed from the Accipitridae and follow the falcons, the Apodidae, Caprimulgidae, and Hirundinidae are in sequence, etc. Whether or not these artificial groupings do, in fact, aid field identification could be determined only by extensive use of the guide in the field and I may make no judgment on this score, but the emphasis on morphologic rather than biologic relationships makes the book unusable in any academic course involving birds, so far as I am concerned.

A second innovation is the inclusion of a number of sections on behavior, migration, nests and eggs, and others. These are designed to provide information useful in field identification. Some sections, such as "Flight patterns," "Ranges," and "Plumage cycles" contain information that is useful. Others, such as "Food foraging behavior [sic]," "Courtship behavior," and "Territory of birds," provide little aid for identification. The section on nests and eggs gets into problems of identification that only years of experience can solve, and the color plates of eggs merely scratch the

surface of egg identification and may do more harm than good in the hands of an inexperienced person.

The section on "Distribution of birds by habitat" contains sound and useful information and well it might, as by far the greater part of this material is simply lifted with little modification from A. H. Miller's painstakingly done "An analysis of the distribution of the birds of California" (1951). The brief statement at the bottom of page 65 that "The above habitat categories and the following lists of birds have been modified after Miller, 1951; Ruth, 1960; and Sans and Stoff, 1959 [= Sams and Stott 1959]" is certainly inadequate acknowledgment.

For each species statements headed "Range and habitat," "Distinguished by," "Behavior," and "Voice" are presented. The statements of range and habitat for most species represent slightly altered condensations of the material so ably presented in Grinnell and Miller's "The distribution of the birds of California" (1944) under the headings of "Status," "Geographic range," and "Habitat" for each form. Where the authors have departed from this source they get into trouble. For example, the Pied-billed Grebe is not "Widely resident . . . in shallow waters of lakes, bays and ocean" as the "Handbook" states but is on bays and ocean only in winter, and the Blue-gray Gnatcatcher is not a summer resident "in chaparral thickets" but rather resides in summer in oak woodland, especially blue oak woodland. Despite the obvious derivation of most of the material on range and habitat from Grinnell and Miller (1944), the only mention of that book that I could find was in the bibliography on pages 210-211 where it was included without comment with 19 other general references.

The color plates are poor, with color values badly off and many plates reproduced so poorly that they appear bleached, as though they had been dipped in Clorox.

Any semblance of scholarliness is largely vitiated by too many typos, at least one of which, "same" instead of "some" under "First winter plumage" on page 14 badly alters the intended meaning; by irritating redundancies ("food foraging behavior," which appears thrice, "foraging for food," "Sierra Nevada Mtns."), occasional poor grammar ("Many birds may not remain in view long enough for the observer to identify it"), occasional careless statements (Brewer's Blackbird and the Starling "are similar appearing blackbirds"), and the failure of entries in the "Table of contents" to correspond to section headings in the text ("Conservation of bird life" = "Bird conservation;" "Ranges" = "Ranges and distribution;" many others).

Finally, the paper copy submitted to me for review is poorly made. In the course of reading it, two plates and accompanying text fell out and several others became loose, auguring a gloomy prognosis for survival in the field for at least my copy. I cannot in good conscience recommend the purchase of this book when superior field guides are available that include the birds of California, although not restricted to that particular avifauna.—JOHN DAVIS.

ALSO RECEIVED

The natural history of Gardner Pinnacles, Northwestern Hawaiian Islands.—Roger B. Clapp. 1972. Washington, D.C., Atoll Res. Bull. No. 163, 25 pp., 7 photos. And: **The natural history of Kure Atoll, Northwestern Hawaiian Islands.**—Paul W. Woodward. 1972. Washington, D.C., Atoll Res. Bull. No. 164, 318 pp., 61 figs.—These two papers are bound in a single volume. They are papers numbers 69 and 81, respectively, of the Pacific Ocean Biological Survey Program

and represent significant contributions to our knowledge of seabirds in the northern Pacific Ocean. The location, climate, plant life, and history of the islands are discussed; original data on population size and breeding cycles of some 20 nesting seabirds are discussed and tabulated; and records of stragglers and winter residents are given. The Polynesian rat (*Rattus exulans*) is an important predator on Kure Atoll; the rats destroy large numbers of eggs and young of at least six species of seabirds and have been observed to kill adult Laysan Albatrosses. Data are given on the green sea turtle (*Chelonia mydas*) and the endemic Hawaiian monk seal (*Monachus schauinslandi*). These papers are indispensable for anyone studying seabirds.—A. J. B.

Adventures in birding/confessions of a lister.—Jean Piatt. 1973. New York, Alfred A. Knopf. Pp. xvii + 268, illus. (black-and-white woodland scene frontispiece + 12 black-and-white bird chapter headings—all by Matthew Kalmenoff, whose name will be found in the last line of the book as a sort of postscript to the "Note on the Type"). \$7.95.—Some people collect bubble gum baseball cards. Some people collect matchbook covers. Some people keep track of all the makes of cars they see on the highways and are full of elation when they spot a Rolls Royce. Dr. Piatt is a collector of bird species. Unlike my husband whose membership in the 600 Club is purely happenchance—a fringe result of his legitimate vocation—Dr. Piatt, a professor of anatomy, has made a secondary career of chasing madly from one to another of the 49 continental United States to add a new species to his list. Except for field identification, no other aspect of bird life seems to interest him.

Only the most ardent lister would be interested in this book and then only if he or she has, like the author, swallowed the dictionary. I do not usually nit-pick a book, but this one invites it. Phrases such as "pullulating humanity," "the camarilla of the Brotherhood," "from our paradigm," "unaided aural acuity," "That gallimaufry," and "the fourteenth-century nominalist" do not impress the average reader. Dr. Piatt should have modeled his writing on Shakespeare, who used the language of the common man and did not apply technical terms to human attributes. Alfred A. Knopf should stop publishing bad books in expensive editions. This publishing house has a knack for picking out manuscripts with highfalutin language and inflicting boredom on the gullible public.—E. S. A.

Finding birds in Trinidad and Tobago.—Donald S. Heintzelman. 1973. Published privately, order from author, 629 Green Street, Allentown, Pennsylvania 18102. 32 pp., 4 maps. \$3.00 postpaid.—This is not a book for the serious lister seeking detailed directions to each nook and cranny that would enable one to see most or all of the birds recorded for these islands. However those making or planning their first trip to Trinidad and Tobago will find its sections on visitor facilities, equipment, weather, and general introduction most helpful. The birding areas listed are generally the more obvious and easily reached. A brief sampling of the birds to be expected at each stop is given but it could profitably have been enlarged, as could the terminal list of selected references (13). In general it is a handy primer.—C.T.C.