ORNITHOLOGICAL LITERATURE

BREEDING BIOLOGY OF THE BLUE-FACED BOOBY *SULA DACTYLATRA PERSONATA* ON GREEN ISLAND, KURE ATOLL. By Cameron B. Kepler. Publ. Nuttall Ornithol. Club 8, 1969: 6 × 9 in., 97 pp. $5.00. Obtainable from the Nuttall Ornithological Club, Museum of Comparative Zoology, Harvard University, Cambridge, Mass. 02138.

Detailed investigation of the biology of the boobies started comparatively recently with studies on the three, widespread, pantropical species—by D. F. Dorward on the Masked, Blue-faced, or White Booby (*Sula dactylatra*) and also on the Brown Booby (*S. leucogaster*) at Ascension Island over 18 months in 1957–59, and by J. Verner on the Red-footed Booby (*S. sula*) in British Honduras for some three months in 1958. This work was followed by the reviewer's own study of the Brown Booby at Ascension for two years in 1962–64, with further visits in 1966 and 1971–72, and by J. B. Nelson's extensive survey of all six species of booby—the Masked, Red-footed, Blue-footed (*S. nebouxii*) and Peruvian (*S. variegata*), mainly in the Galapagos Islands for about a year in 1964, and the Red-footed, Brown, and Abbott's (*S. abbotti*) on Christmas Island, Indian Ocean, for some six months in 1967.

More or less at the same time as Nelson was studying the Masked Booby in the Galapagos, Cameron B. Kepler was similarly engaged on Green Island. Although Kepler himself was in the field for only about four months, he was able to draw on data assembled by personnel of the Pacific Ocean Biological Survey (Smithsonian Institution), so that collectively two breeding seasons were covered, with Kepler also studying the birds' ethology in detail. It is regrettable that such a system of investigation has not been maintained at Kure, though it could well be established elsewhere, with a resident team collecting routine data in the long term and visitors undertaking more detailed projects over shorter periods. It is becoming increasingly obvious that the breeding biology of the boobies, indeed of tropical seabirds generally, requires long-term observation because, for example, their breeding cycles are protracted, and laying dates and productivity can vary greatly from year to year. Further, there is now clear indication of variation between allopatric populations of the same species, especially the three pantropical boobies. Thus, at different stations, there may be intraspecific differences not only, for example, in the duration of pair-bonds, of colony occupation, and of nestling and juvenile dependence, but also in certain aspects of the behavior functioning in social communication. More and more, therefore, is there need for long-term and repeat studies at various seabird stations. It is becoming clear that one is ill-advised to generalize too widely from the findings on one population or one breeding period.

Kepler's book deliberately avoids this danger and is particularly welcome as a most useful addition to our knowledge of the Masked Booby and sulid biology in general. Of the six chapters, the two concluding ones, which occupy about one-third of the space, deal with the behavior of the Masked Booby at Kure—spacing-out behavior in Chapter 5 and heterosexual behavior in Chapter 6. Although these observations were made independently of those of Nelson in the Galapagos, for convenience the terms used and the order of presentation follow those of Nelson's paper on the same species, published earlier in *Ibis* (1967). It is not proposed to summarize Kepler's interesting and careful observations here, but it should be noted that he detected small differences in the Sky-pointing display of the male on Kure as compared, for example, with the form of that behavior in the Galapagos.

Chapter 1 describes the environment at and around Kure. During the previous decade,

the atoll itself was considerably altered by man, whose artifacts continue to cause mortality among the seabirds. There are some fourteen breeding species of the latter, the most numerous being the 7,000 Laysan Albatross (*Diomedea immutabilis*). Among the Pelecaniformes, 2,200 Red-tailed Tropicbirds (*Phaethon rubricauda*) and 1,600 Great Frigatebirds (*Fregata minor*) predominate, while the three pantropical boobies, all at the northern edge of their range, are among the least numerous of all seabirds on Kure, with 160 Masked Boobies, 90 Brown, and 550 Red-footed.

Chapter 2 discusses taxonomy, distribution, and morphology. Like an increasing number of workers, Kepler prefers to treat the boobies in a separate genus (*Sula*) from the larger gannets (*Morus*), a practice which has much to recommend it. The Masked Booby finds its northernmost breeding station at Kure (latitude 28° 25′ N), where the birds belong to the race *personata*. The sexes are similar except in size (females significantly larger), color of the bill (brighter in males), and in voice.

The Green Island colony of Masked Boobies is described in Chapter 3. It is virtually confined to the central plain and not to the periphery of the island, as in most central Pacific colonies of the species. The population averaged 140 birds in 1963–66 and was evidently declining slightly each year. Seventy-five percent of the birds breed in one discrete sub-colony, the rest in another, with no communal gathering areas or "clubs," as reported at some other colonies of the species. Kepler plotted the diurnal fluctuation in numbers and assessed the time spent feeding at sea. Most absences that terminated during the daily 12-hour observation period were short, averaging 4.9 hours for males and 5.9 hours for females, a significant difference. Absences lasting 36 hours or longer were not adequately covered, however, and many of the shorter absences—those of less than two hours—may not have been concerned with feeding at all; as another reviewer has remarked, no mention is made of out-flights for bathing. The chapter provides such information about the territories defended by pairs of birds and bachelor males, and concludes with a discussion of the "functions" of territory in the Masked Booby. Kepler suggests that the wide spacing out of breeding pairs (1) increases the efficiency of nesting (by reducing adverse pair-interactions) and (2) limits population size and hence competition for food in waters that are poor in food supply. Comparison is made with the colony of Masked Boobies on Boatswainbird Islet, Ascension, where territories were ten times smaller and nesting success nearly six times lower. In the reviewer's opinion, however, the value of such interpretation is limited. At both Kure and Ascension, nesting density is a function of available space and numbers; because of predation by feral cats, virtually all the Ascension Masked Boobies now nest on Boatswainbird Islet, where they are overcrowded. It is the Ascension birds, not the Kure ones, that frequently face food difficulties when breeding; if territory size were really adaptive in trimming population size to suit the availability of food, one would expect denser nesting on Kure than on Ascension.

Chapter 4 is concerned with breeding biology. Following a brief outline of reproductive seasons in other populations of *S. dactylatra*, those at Kure in 1964–65 are described in detail. As elsewhere, the species is an annual breeder, laying mainly in the period January–May, but the 1965 season was later than that of 1964 due, apparently, to climatic factors, including a severe gale, which affected foraging behavior in 1965. The author then digresses to review briefly some of the literature dealing with the effect of the food supply on breeding phenomena in birds. Copious information is given on many aspects of nesting, and lastly in this chapter, the development of the chick is described in detail.

Kepler's paper poses many interesting questions for future consideration. For instance, the Masked Boobies at Kure seem to have a favorable food supply, at least when breeding,

and do not have to range far out to sea for days at a time in search of their prey, unlike most other populations of the species. Yet numbers are small and decreasing, in spite of a high fledging success. Most puzzling of all, the juveniles, once fledged, return only briefly—unlike those in the Galapagos, where Nelson recorded the "period of post-fledging feeding" as over 60 days. Does this mean that Kure juveniles come much quicker to independence, or was there, for example, an extremely high mortality soon after fledging during the period of study? Much the same question can be raised at Ascension, where Dorward recorded return-periods of only up to four weeks during 1957–59, not only for the Masked Booby but also for the Brown. Later observations by the reviewer in 1962–64, however, established a mean return-period after fledging for juvenile Brown Boobies of no less than 25 weeks.—K. E. L. SIMMONS.

A FIELD GUIDE TO THE BIRDS OF MEXICO AND CENTRAL AMERICA. By L. Irby Davis. Univ. of Texas Press. 1972: 5 × 8¾ in., 282 pp., 48 col. pls. by F. P. Bennett, Jr., $10.00 hardbound, $6.50 softbound *and* A FIELD GUIDE TO THE BIRDS OF MEXICO by Ernest P. Edwards, published by Ernest P. Edwards, Sweetbriar, Virginia, 1972: 5¾ × 9 in., 300 pp., 3 maps, 24 col. pls. (Murrell Butler 14½; Ernest P. Edwards 7½; John P. O'Neill 1, and Douglas Pratt 1), $8.50 softbound.

The purpose of a field guide is to aid those unfamiliar with an avifauna in correctly identifying to species birds seen in the field. That many field guides also serve as exceedingly useful quick references for research workers may be considered a secondary function. The introduction of a field guide should define and describe the region covered and, if the region is politically or ecologically complex, present a thumbnail discussion and map to assist readers in locating geographic names or habitats used in range descriptions; terminology should be explained. The text of a good guide should follow a set format sufficiently to permit comparisons back and forth between species. It should be concise yet explicit; accurate yet brief. Taxonomic innovations should be avoided and changes in popular names should be minor. The illustrations should present diagnostic characters in as simple and as large a format as economically feasible, ideally with major age or sex (or geographic) variations included when possible. Using these criteria, the two nearly simultaneously appearing field guides covered by this review represent nearly the extremes in quality. The Davis book is a farce except for the useful colored plates by F. B. Bennett, Jr., while the Edwards guide is good (excepting some exceedingly poor colored plates)! Both authors elected to illustrate only forms not illustrated in available guide books to North American birds.

Although Davis's guide covers nine countries, and range descriptions mention most of the 31 states of Mexico, a map is not presented nor are habitats defined, although occasionally used in range descriptions. Because of Davis's interest in sound recording, 70 percent of the brief introduction is devoted to an exceedingly complex (and confusing but perhaps unavoidably so) discussion of song analysis and description. However, a bird watcher would need to include a stopwatch and a pitch harmonica (or set of tuning forks) in his field gear to decipher the voice descriptions which are presented for only some birds. Often only one song is presented, although many species have more than one type. The voice of many birds is not mentioned at all, *nor* are field characters given for many either in text or in the captions of the plates. The range is presented for all forms, but some ranges are less than accurate; for example; the Song Sparrow is more widespread in winter only in Sonora. The range given for *Rallus elegans tenuirostris* has not incorporated information from literature 11 years old; the Pinnated Bittern has

not been collected in Belize, Guatemala, Honduras, or Panama, yet it is said to occur E. Mexico to Argentina. The Swamp Sparrow winters to central Mexico, etc.

But these criticisms pale to insignificance compared to the appalling English and scientific terminology. "The taxonomy adopted is intended to be useful to those having little knowledge of the technical classification presently in vogue among museum systematists. A name is provided for each distinct population [known to Davis] in order to make taxonomy useful rather than confusing to the student."

This stated, Davis apparently felt he had license to ride roughshod over more than two centuries of ornithological work. I am sure few of the "museum ornithologists," living or dead, who are said to have advised him will appreciate being associated, even by inference, with the nomenclature used. To decipher the names, both Latin and English, and to correlate them with recognized species, and with names used in other standard guides and texts, one would need the 11 volumes of Ridgway and perhaps the 15 volumes of Hellmayr too! The "species" recognized are at times ludicrous—as for example, the Long-crested Cardinal, obviously no more than a race of the Common Cardinal. Yet forms equally as distinct, with which Davis is apparently unfamiliar, were not given distinct names. If he had been consistent, he should have included six species of Song Sparrows in Mexico, each easily recognized in the field!

It is obvious that the University of Texas Press did not have the manuscript read by an ornithologist before accepting it for publication. If some devoted soul—or someone mad enough—would make available new captions to the 48 plates, the other 282 pages could be discarded, saving weight in the field and shelf space in the library. The plates, when provided with new captions, will be useful in the field and in the museum, for they do provide stylized but adequate illustrations of all non-1957-A.O.U. Check-list species found in Central America, and of many subspecies as well.

By comparison Edwards' guide is nearly exemplary. The introduction is brief but good, defining and describing the regions and the author's format, terminology, and abbreviations. Maps are presented of the states of Mexico and the countries of Central America, and of the regions and subregions of Mexico used in the ranges. Species accounts include the usual information: common name in English *and* Spanish, Latin name without subspecies, illustration reference, migratory status and distribution in altitude and geographically. Then briefly the general status, comparative field marks, often ecological niche and call notes are described, and finally the description is briefly repeated in Spanish. If a species exhibits major geographic variation, this is usually mentioned. Sounds good, and it is. Still, criticisms can be made.

1. The binding of my copy has not lasted through the review preparation and I have a set of loose colored plates. This is a nuisance, to say the least, for a field guide.

2. Although the subtitle reads "including all birds occurring from the northern border of Mexico to the southern border of Nicaragua," the inclusion of species south of Mexico seems to have been an afterthought. These are listed with only one to four-line capsule accounts and without illustrations. I hope a second edition will find these expanded to full accounts with illustrations.

3. The colored plates range from poor (and poorly reproduced—especially plate 17) to excellent. Some, such as plate 9 with the trogons, kingfishers, and motmots or, for that matter, plates 13 or 20–22, will stand favorable comparison to those of any field guide in print. Unfortunately, for unknown reasons some plates were printed on colored stock and the bird colors are consequently distorted, particularly plates 21 and 22 printed on blue paper!

4. Edwards, as in his "Finding Guides," uses a few of his own common names, but usually provides the alternative names. Likewise, a few subspecies are listed as full

species, although relationships are usually mentioned. Unfortunately, the yellow-eyed Baird's Junco is said to be often "lumped with [the dark-eyed] Oregon Junco," whereas it is related to the yellow-eyed *Junco phaeonotus*.

5. And finally, in a later edition better editing will prevent some inconsistencies between English and Spanish descriptions. For example, the bill of the Common Merganser is said to be red (male) or dull orange (female) in English but is said to be yellow in Spanish.

For those visiting Mexico the Edwards guide will prove adequate, especially if supplemented by the plates by Bennett; for those visiting the rest of Central America, Edwards supplemented by the Bennett plates with annotations, together with H. C. Land's "Birds of Guatemala" and F. B. Smithe's "The Birds of Tikal," provide the only currently available aids.—ROBERT W. DICKERMAN.

TIBET AND ITS BIRDS. By Charles Vaurie, H. F. and G. Witherby Ltd., London, 1972: 7 × 10 in., xv + 407 pp., 3 col. pls. by Arthur Singer, 24 photos, maps. £10.50.

This book is a labor of love by the author, who has become fascinated by one of the remotest areas of the world during his years of work on the bird faunas of northern Europe and Asia. Dr. Vaurie, who has worked at the American Museum of Natural History for many years, became interested in Eurasian birds under the tutelage of Dr. Ernst Mayr, then Curator of birds in New York, and much of his early work was concerned with sorting out and classifying the large collections of Dr. Walter Koelz, the plant explorer. Dr. Koelz had deposited his bird collections in New York while he travelled incessantly in Asia from Iran to Afghanistan, Ladak and India as well as the sub-Himalayas of Nepal. It is not, therefore, a narrative of field work, for Dr. Vaurie has never visited Tibet, but rather what might be called, in an old-fashioned sense, a "cabinet" work.

As such the book has great value. The description of the geography of Tibet is detailed and highly comprehensive, the best of its kind I have encountered. The account of the voyages of the travellers who have penetrated the country is equally comprehensive, although confined only to those who have collected specimens of birds, thus excluding some of the travellers who have made important meteorological or kindred observations such as William Rockhill. Some of the mountaineers and botanists such as Smythe have similarly been neglected, although the late Frank Kingdon-Ward has come in for a good deal of attention. But to treat all the authors who have speculated about the origins of Tibetan eco-geography, or its fauna and flora would require still more encyclopedic labors, and the present author has created a history and a description of Tibet which will stand doubtless for many years.

For those who might be interested in a synoptic list or a hand-book of Tibetan birds, giving information on habits or ecology, this book will not provide a compendium. Much of the current work on migration of birds across central Asia is still unpublished, in records either in India or the USSR. The question of *how* the enormous volume of birds migrate across the desert areas at high altitude, and then cross the mountain barrier of the Himalayas is still unrefined. As one who has witnessed the passage of huge numbers of birds, along with other recent workers such as Sálim Ali and Gerd Diesselhorst, I can agree with Vaurie that Colonel Meinertzhagen was mistaken in referring to any resident or partially migratory species of the area as "weak" or a "refugee." However, I believe the recent geology of the higher Himalayas and the adjacent Tibetan plateau is still poorly understood. I suspect that glaciation was far from complete, and that

endemism in birds, mammals, and other animals as well as plants, has had ample opportunity to flourish during the recent geological past despite the recurrence of pluvial and glacial conditions. Much remains to be done to correlate biogeographical evidence with paleohistorical evidence in order to understand the present distribution of a fauna such as the avifauna.

The maps are drawn with Vaurie's usual attention to detail. The photographs are interesting, especially the inclusion of portraits of some of the early explorers. The plates by Arthur Singer strike me as extraneous, being only three in number, therefore only a very partial representation of the fauna, and very cold and somewhat harsh in tone. Perhaps they are a come-on by the publisher.

Much remains to be discovered about Tibet as well as its avifauna. There are still bird species to be recorded from there, notably another tragopan most likely. At least this volume sets out to detail the birds that have been found by every bird collector, an extraordinary feat in itself. It points out the obstinacy of communication, the failure of too many collectors from Hume to Schäfer to Koelz to record what in fact they did do, where they went and where they actually collected. Alas for the lost opportunities, and oh for the power of total recall. Stuart Baker used to say, "it's all here," tapping his forehead. But what was all there, and where did it go? Will anyone ever collect birds again in Tibet, and publish their observations? One wonders. Meanwhile we have Dr. Vaurie's fascinating compendium, an essay as it were, in aquisition, in man's frailty, and in our fragmentary knowledge of the world of birds.—S. DILLON RIPLEY.

THE BIRDS OF KOREA. By M. E. J. Gore and Won Pyong-Oh. Royal Asiatic Society, Korea Branch in conjunction with Taewon Publishing Co., Seoul, Korea and Charles E. Tuttle Co., Rutland, Vermont and Tokyo, Japan, 1971: 6¾ × 9¾ in., 450 pp., endpaper maps, photos, 40 col. pls. $15.00, Won 4800.

During the past ten years a number of books on Asian birds have appeared, to fill the gaps where amateur and professional bird people previously had little to use. Beautiful bird books in Japanese are available, and there is Yamashina's inadequate book, in English, on a few Japanese birds. Other works include Severinghaus, Kang, and Alexander's little book on a sample of the birds of Taiwan in English and Chinese, designed to stimulate interest in birds among Chinese students, Boonsong's very valuable "Bird Guide of Thailand" with color plates showing most of the birds of southeast Asia, and Wildash's "Birds of South Vietnam." King and Dickinson's volume on birds of continental southeast Asia is soon to appear, Boonsong's work is being revised, Smythies' "Birds of Borneo" has been reprinted, duPont's "Philippine Birds" has recently been published, and Medway and Wells are working on a volume on Malaysian birds.

Now we have this very complete volume on the birds of Korea, covering 366 species. Excerpts from the brochure advertising this book accurately describe it and its authors as follows: "The first guide to the birds of the Republic of Korea with 240 species illustrated in full color. Every species of bird which occurs or has occurred in Korea is described with notes under the following headings: Identification—an easy-to-follow description with the field characteristics to enable anyone to identify the bird; Habitat—the type of habitat where the species is most likely to be encountered; Status—an assessment of its present status in Korea with detailed records of uncommon or rare species. The world range is included and recognized subspecies are listed. There are also chapters on: Topography and climate; Bird habitats in Korea, with an indication of the species commonly encountered in each zone; Migration through Korea; The problem of

conservation. . . . Michael E. J. Gore is a British diplomat who has studied birds in Europe, Africa and Southeast Asia. Since 1967 he has been Consul in Seoul. A member of the British Ornithologists Union, he has previously published papers on birds of Cyprus and Borneo. . . . Won Pyong-Oh is Director of the Institute of Ornithology, Kyung Hee University, Seoul and is a recognized authority on the birds of Korea. A professor of zoology, he has published many papers on the subject and on conservation of wildlife in Korea. He is a Secretary of the International Council for Bird Preservation and a member of the Survival Service Commission of the International Union for the Conservation of Nature and Natural Resources."

The real charm and value of this book lie in its bilingual nature. Koreans are a proud and individualistic people, so this volume in both Korean and English should please them. Because of the dual languages, the book is too bulky to be used as a field guide, but it is very good to have at home when you want to check on what has been seen in the field. The plates are adequate but some of the reds are too red, the blacks too pale, etc. The text concerning each species is good although I feel that most laymen are not interested in subspecies, and that this space might better have been given to more discussion of ecology or habitats. Dr. Won is a taxonomist—as I am not—so he insisted that these data be included. The subspecies could have been listed as an appendix checklist.

The introductory chapters are very useful, especially the one on the history of Korean ornithology, which gathers together bits of information that would be difficult for the reader to find elsewhere. A list of additional birds known from North Korea is given, there is a list of references, and the book is indexed both in Korean and English.

When I visited with Dr. Won in 1969, he and Mr. Gore were deeply engrossed in the preparation of this volume. They were having their problems of communication, agreement, and objectives. The end result is a fine compromise and a valuable addition to the English ornithological literature of Asia. It will be useful to anyone living in Japan, Korea, China, or Hong Kong.—H. ELLIOTT MCCLURE.

BIRDS OF NEW GUINEA. 160 colour-plates from the lithographs of John Gould. Text by Abram Rutgers. St. Martin's Press, New York, 1971: 7½ × 10 in., viii + 321 pp., 160 col. pls. $15.00.

Reproduction in color of the bulk of the John Gould lithographs of the birds of New Guinea in a single short volume priced within the reach of the average layman and ornithologist is an occasion of some moment. New Guinea with some 670 recorded species and at least 550 land and fresh-water forms, has one of the richest bird faunas in the world; it is the heartland of cassowaries, paradise kingfishers, the great crowned pigeons, loriine parrots and birds-of-paradise and bower birds. Collectively, the Gould paintings, including those added under the direction of Bowdler Sharpe, remain the finest and most comprehensive available on the region's bird fauna, even though only about a quarter of its species are represented. Some 160 of these appear in the book under review. As is well known, the attitudes of the figures are often distorted, the postures of a number of birds-of-paradise being particularly unreal; there is at times a less-than-virile Audubonesque quality about them. An intriguingly consistent feature is the Australian background to many of the paintings: *Monarcha vidua* and *Todopsis cyanocephala* are depicted among Australian *Grevillea*, and *Micropsitta geelvinkiana* on *Leptospermum*; and the mouse-like animals in the background of *Pitta 'rubrinucha'* from Buru are the Australian marsupial *Sminthopsis crassicaudata*. Many arboreal rain forest species such

as *Pitohui kirhocephalus* and *Diphyllodes magnifica* are perched on rocks in open habitat. But these quirks aside, the paintings are noteworthy for their historical significance and accuracy of color, of which little has been lost in the present reproductions.

The accompanying text by Abram Rutgers and the choice of species are rather less successful. To claim as does the book by its title that it is about New Guinean birds is misleading. Of the species shown, no less than 38 (almost 25%) are not found in New Guinea or its off-shore islands, and another sixteen are of races occurring outside the region. Five endemic Australian species, e.g. *Aphelocephala pectoralis* and *Chlamydera maculata*, could well have been left out to preserve integrity, especially as they might have been replaced by Gould figures of such exquisite New Guinean species as *Halcyon nigrocyanea*. Current systematic arrangement but lack of an index makes individual species difficult to find.

Rutger's text is poorly contrived. Its scientific nomenclature, vernacular names, and textual information are drawn in the main from A. L. Rand and E. T. Gilliard's fine handbook, "A Handbook of New Guinea Birds." Not only have these been combined in an amateurish and at times confusing way, but a baffling number of misapprehensions and exaggerations have crept in as well. In a leafing-through of the pages, I noted over fifty serious errors. These cannot be itemized here, but some of the more obvious are as follows. In distribution, *Casuarius casuarius* is said to be confined to the New Guinea area, whereas it occurs also in northeastern Australia; it is inferred that *Chalcopsitta scintillata* occurs all over New Guinea whereas it is actually confined to the southern lowlands; conversely, details given under *Astrapia nigra* imply that all five allopatric species of the genus are sympatric in the Arfak Mountains; lowland *Pitta sordida* is said to live in mountain forests; and two species of the essentially montane genus *Peneothello* are claimed to occur in the lowlands. Concerning habits, the observation that *Epimachus fastosus* (correctly, *fastuosus*) feeds on amphibians which it wedges in tree crannies before tearing them to pieces is fantasy; the species is largely a fruit-eater. And *Sericulus chrysocephalus*, mentioned under *S. aureus*, builds a primitive avenue, not a domed bower.

Nomenclatural inconsistencies and taxonomic inaccuracies are all too frequent. The scientific name heading for each species changes from binomial to trinomial in a bewildering and, in a book of this kind, pointless way. There are also several anomalous departures from Rand and Gilliard nomenclature, notably in the use of the now obsolete *Kakatoë* in lieu of *Cacatua*. The taxonomic accounts of the genus *Meliphaga* given under *M. flaviventer* and of *Timeliopsis griseigula* are nonsense: in *Meliphaga*, infra-specific groups in *M. flaviventer* have been confused with species groupings in the genus; in *Timeliopsis griseigula*, the race *fulviventris* appears to have been confused with Rand and Gilliard's account of the distinct montane species, *T. fulvigula*. Ornithologists familiar with Australo-Papuan flycatchers will be surprised to note that the Solomon Islands *Monarcha vidua* has been referred to the genus *Piezorhynchus*, which is said to be characterized by a white collar and rump. *Piezorhynchus* in fact was based on *P. alecto*, a plain-backed species now known to be an aberrant member of the genus *Myiagra*.

The text has some praiseworthy features. Most forms figured have been identified according to current taxonomic concepts and with names presently in use. (One exception is the plate of *Mino anais*, which apparently represents the race *orientalis*, not *robertsoni* as stated.) There are also useful comments on the advent of various species live in Europe and of their performance and behavior as caged birds. Offsetting this are the frequent plumage descriptions of figured species, all of which are superfluous because of the colored illustrations.

If the text can be overlooked, the book is beautifully produced. Reproduction of the lithographs is faithful, the printing clear and well laid out, the quality of the paper excellent, and the binding sound. Orthographic errors are few and not serious. In summary, the book is a rich and lovely collection of the Gould lithographs of New Guinean birds. In practice, it is useful when consulted along with a reliable text such as Rand and Gilliard's Handbook. This in turn highlights a remaining great gap in the ornithological literature of New Guinea—a completely illustrated manual of the birds of the region wedded to a full, sound, and balanced text.—RICHARD SCHODDE.

NATURAL RESOURCE CONSERVATION—AN ECOLOGICAL APPROACH. By Oliver S. Owen. Macmillan, New York, 1971: 6½ × 9½ in., xii + 593 pp., photos and diagrams. $9.95.

Putting together a text for natural resource education is indeed a troublesome task. In these times a rather diversified set of scientific, economic, and social factors are expected to be considered. It is especially difficult when an author of the old school tries to jump on the environmental bandwagon by putting an "ecological" framework around the "natural resources conservation" of his youth. The job *has* been done effectively, but not by this author.

I gave the text to Klint Wigren, one of the best foresters in a heavily forested state. As a "natural resource conservation" man looking for some insight into the "new ecology" he was totally confused by an author who treated the two concepts as separate entities for which he, the author, could find only a *rough* fit at best. If Klint was confused, I doubt that a student using this text would fare much better, and certainly would not be left with any grasp of the ecological basis for conservation measures.

The cover flap of this book suggests that it is "informal—but very carefully integrated." I take issue with somebody's idea of integration. In fact, it appears to me that loosely organized chapters and lack of appropriate continuity throughout the book are major faults of the work.

There are other faults. The writing contains long, wordy sentences. The heavy, heavy documentation serves no purpose for the intended audience of beginning students, but adds to the disjointed flavor of the book. Most of the many photographs are either superfluous or confusing adjuncts to the text. Many of the charts are crowded and difficult to read. The author apparently tries to be contemporary in his use of the metric system in some illustrations, but then compares such data with other information expressed in the English system.

The book misses its mark by a long way. Students of natural resources conservation or ecology or "an ecological approach to natural resources conservation" can find other, more useful texts.—RICHARD B. FARRAR, JR.

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