RECENT LITERATURE

Edited by Bertram G. Murray, Jr.

BANDING AND LONGEVITY

1. An apparent longevity record for the Black Noddy. G. A. Jobanek. 1976. *N. Amer. Bird Bander,* **1**(2): 71—A Black Noddy (*Anous tenuirostris*) banded, evidently as an adult on Sand Island, Midway Atoll, 15 February 1964, was recaptured at its nest at the same locality on 13 December 1972. The elapsed time between banding and recovery was 8 years 10 months.—Roger B. Clapp.

2. Starling longevity record? C. L. Strelitzer. 1975. *Inland Bird Banding News,* **47**(1): 19.—Strelitzer reports a Starling (*Sturnus vulgaris*) banded as a young bird on 4 July 1956 and recovered on an unknown day in March 1974. At death the bird was at least 16 years 8 months old. Strelitzer thinks this is the greatest longevity attained by a Starling. It is not. Rydzewski (*Ring,* **76**: 70, 1973) listed a Belgian bird with an elapsed time of 20 years 18 days.—Roger B. Clapp.

3. An Ovenbird at least seven years old. P. H. Homann. 1976. *N. Amer. Bird Bander,* **1**(2): 66.—An Ovenbird (*Seiurus aurocapillus*) banded as an adult 6 September 1969 was killed while incubating 5 years and 10 months later. This record is exceeded by that of the oldest Ovenbird listed by Kennard (*Bird-Banding,* **46**(1): 69, 1975) which was also banded as an adult and which lived 7 years and 1 month from banding to recovery.—Roger B. Clapp.

MIGRATION, ORIENTATION, AND HOMING

4. Bird-ringing results in Poland. Migrations of the Starlings, *Sturnus vulgaris* L. M. Gromadzki and W. Kania. *Acta Ornithol.* **15**(5): 280-321. (In English with Polish and Russian summaries.)—Summer migration of Starlings in northern Poland starts in late June. Fall migration begins in September, but highest intensity is in October. Spring arrival begins in February with peak movement in March. Main wintering grounds of Polish Starlings are England, France, Iberian Peninsula, southern Italy, and northern Africa. Most of the movement to these areas occurs in November, with December and January the main overwintering months. The probability of three rather than two Polish migrational populations is discussed.—Leon Kelso.

NESTING AND REPRODUCTION

5. Production of young by the Willow Grouse *Lagopus lagopus* (L.) in Norway in relation to temperature. T. Slagsvold. 1975. *Norw. J. Zool.,* **23:** 269-275.—This paper presents a statistical analysis of the relationship between ambient temperature and the productivity of Willow Grouse pairs, the latter assessed from shooting bag records. High June temperatures were positively correlated with high breeding productivity measured the following autumn. Slagsvold suggests the warmer June temperatures favor more successful incubation by the famales and more favorably timed emergence of insects and of spruce shoots.—Raymond J. O'Connor.

6. Breeding biology of Zebra Dove *Geopelia striata* Salvadori) in captivity. I. G. Callo. 1976. *Philipp. For. Res. J.,* **1**:48-52.—In a low key presentation, the author presents observations on one pair and their progeny kept in a zoo for three years. A total of 18 clutches was documented (1-2 eggs/clutch), all between August and March. The species is known as the Barred Dove in Hawaii and has been widely introduced elsewhere.—C. J. Ralph.

7. A contribution to the breeding biology of the Barn Owl, with particular attention to dependence on the Common Vole. (Beitrage zur Brutbiologie der Schleiereule, *Tyto alba*, unter besonderer Beruchsuchtigung der Abhangigkeit von der Feldmausdichte.) M. Schonfeld and G. Gerbig. 1975. *Hercynia*, Neue Folge, **12:** 257-319. (In German with English summary.)—This survey covered 1,000 km² in "Mittelere Saaletal," which included 254 villages with 159 churches. The Common Vole (*Microtus arvalis*) population from 1967 to 1974 varied. It was as high as 332 per 1,000m². For Barn Owls, 308 broods fledged 1,083 young; 1,094 were banded, including 77 adults. Of 72 clutches, 357 eggs were measured and weighed. The development of 354 juveniles was recorded in detail. Juvenile females bred at 200 days of age. A slight correlation between clutch size and age of females was noted. General breeding success closely correlated to local Common Vole population density. Female Barn Owls averaged 25% heaveier than males. Beyond the above summation the details of the local situation are abundantly described and illustrated.—Leon Kelso.

8. Ecology of the Songar Titmouse. (Ob ekologii dzhungarskoi garskoi gaichki, *Parus songarus* Sev.). A. Kovshar. 1976. *Vestnik Zool.*, **1976**(3): 34-39. (In Russian with English summary.)—Nesting was observed and recorded at 13 nests by actograph, at Almatinsk Lake, Tyan-Shan. The breeding period lasted 67 days or more. Therefore only 1 brood per year seems possible. Nest cavities were excavated in apparently live spruce trunks as well as in decaying stumps, 1 to 2 m above ground. Broods receiving food, from both parents, were visited 200 to 265 times per day. Many other details including foods harvested are presented.—Leon Kelso.

BEHAVIOR

9. Dust bathing by the Hagel Hen. (O pylevykh vannakh ryabchika, *Tetrastes bonasia.*) S. Fetisov. 1976. *Z. Zhurn.*, **45**(5): 736-740. (In Russian with English summary.)—The dust bathing activities of the Hazel Hen in the Pskov region are described in detail. Control of bird lice and feather mites is regarded as the most likely consequence. Over 100 dusting sites were found, of which 53 were kept under daily observation. Temperature, humidity, and particular events such as rain or snow were not as influential as illumination in this apparent plumage cleansing. The dust baths were readily alternated with or interrupted by sunbathing.—Leon Kelso.

10. Jungle Mynah "Anting" with a Millipede. F. Clunie. 1976. *Notornis*, **23:** 77.—On 11 March 1974 at 1300 hours in Suva, Fiji Islands, a Jungle Mynah (*Acridotheres fuscus*) seized a red millipede (*Trigoniulus lumbricinus*) and, holding it in its bill, rubbed it against the plumage of its breast. Then, raising each wing individually, it rubbed the millipede under the wings and against the flanks. After "dabbing" the millipede on the ground, this action was repeated for two minutes. The juice from the arthropod could be smelled at a distance of 5 m. The above instance occurred in dense garden growth during a light drizzle. The Mynah had just bathed in a roadside puddle. This is another example correlating "anting" to humidity.—Leon Kelso.

ECOLOGY

11. A field study of the Short-eared Owl, *Asio flammeus* (Pontoppidan), in North America. R. J. Clark. 1975. *Wildl. Monogr.*, No. 47. 67 p. $2.25.—Whether the bouncing and buoyant flight of the Short-eared Owl is responsible for its occurrence in the most remote areas of the earth was one of the speculations of E. Howe Forbush in his famed "Birds of Massachusetts and other New England States," 2. 1927. The flight capacity of this species in the field is well elaborated in this monograph. And there is much more in this concise, concentrated account. An intensive 3-year field study, mostly in New York state and southern Manitoba, was intended to elucidate activity of an open country raptor and to find how it is able to find areas where vole populations are high. Also the adjustments when prey abundance declines were of concern. Long

term attention and finding spots with an abundance of the subject owls featured this as well as other studies of recent date. Many observers in the past have had to rest content with finding one pair or nest only. Here evidence suggests that these owls move about in groups, their flight adaptations minimizing energy expenditure, along with light wing loading and "high power-weight ratio." "Efficient hunting techniques, elucidated in this study, enable these owls to effectively exploit a prey population once it has been located." In wintering areas when voles and owls both were abundant, hunting territories were maintained. This would suggest a population density regulating mechanism based upon the food supply. The onset of the reproductive period was signaled by abandonment of the communal roost and by persisting in their hunting territories. Courtship by the males, pair formation, and territorial expansion by mated males followed. The species displayed several features of an irruptive species: nomadic movements, specialized feeding habits, plasticity of time and locale of breeding, and "flexible fecundity." "An overriding characteristic of their behavior is their propensity for open country. A major shortcoming in regard to their survival is their ground nesting habit which makes them susceptible to high nesting mortality, especially in areas where agricultural practices make them vulnerable."—Leon Kelso.

12. The Syrian Woodpecker in West Ukrainian SSR. (Siriiskii dyatel na zapade Ukrainskoi SSR.) V. Talposhch. 1975. *Biol. Nauki*, **1974**(8): 16-22. (In Russian.)— Data on distribution, habitat, and breeding biology of *Dendrocopos syriacus*. The woodpeckers foraged mainly at distances of 50-70 m from the nest tree on beetles and lepidopteran larvae. In marked contrast to the other populations of the species there was a minimum of vegetable matter in the diet. The species is expanding its range. Despite marked sympatry with the Great Spotted Woodpecker (*Dendrocopos major*), no physical conflict was noted. Of special note was a "drumming trill" signaling approaches and departures in feeding the young (at 8 nests), by males, 94 times and by females, 13.—Leon Kelso.

PARASITES AND DISEASE

13. Philippine birds and their internal parasites. C. S. Catibog. 1976. *Philipp. For. Res. J.*, **1**: 53-70.—Parasities of more than 50 species are documented from the literature, about one third of them for the chicken.—C. J. Ralph.

PHYSIOLOGY

14. Adaptive significance of the caeca in Japanese Quail and Spruce Grouse (Galliformes). L. Fenna and D. A. Boag. 1974. *Can. J. Zool.*, **52**: 1577-1584.—The gross morphology of the caeca in *Coturnix coturnix* and *Canachites canadensis* is described and their adaptive value examined by experiments on *Coturnix* fed low (7%) and high (37%) fiber plants. Birds fed the low fiber diet at 23°C ate less food per day than did high fiber diet birds and gained more weight per day. They also survived better in captivity. Birds held at 2° to 10° C ingested more food than did those at 23° C, but weight differences were small. These results were independent of diet quality. Comparison of the lengths of the small intestine and of the caeca of the four experimental groups (high and low fiber, high and low temperature) showed no differences between diets but substantial differences between temperatures. These results indicate, therefore, that the winter increase in caecal length reported of galliformes in the wild reflects the greater ingestion rates then necessary rather than simply the seasonal change of diet. Fenna and Boag suggest, therefore, that the caecum acts as a reservoir into which the liquid component of the diet of vegetation can be squeezed by the gut, with the fibrous component rapidly passing on down the intestine to be egested. Such a system obviates the need to carry in flight a large mass of fermenting cellulose.—Raymond J. O'Connor.

15. The pectoral muscles and the development of thermoregulation in chicks of Willow Ptarmigan (*Lagopus lagopus*). A. Aulie. 1976. *Comp. Biochem. Physiol*, **53A**: 343-346.—Little growth in body weight, size of pectorals, and size of legs took place over the first three days of chick life, but the pectorals then increase differentially with respect to body weight for about 10 days. A shivering response to cold exposure was present from the day of hatching, at first due to activation of the leg muscles alone but increasing in strength from the third day as the pectorals developed. This trend was paralleled by increasing ability to resist loss of body temperature. Chicks began calling once their body temperatures fell below about 35° C, clearly adaptive in the wild. Maximum rates of oxygen consumption at 10° C increased with growth in the pectoral muscles.

I notice a tendency on the part of authors, such as Aulie, who work with precocial species to ignore the literature on altricial species and vice versa. This is a pity as the comparisons beginning to be possible between them are as interesting as the actual data presented in the individual studies.—Raymond J. O'Connor.

16. The influence of weather and individual interactions on the food intake of captive rooks (*Corvus frugilegus*). I. R. Swingland. 1975. *Physiol. Zool.*, **48**: 295-302.—The food consumption rates of captive Rooks feeding in competition with each other at a single bucket of wheat were examined in relation to such independent variables as time food was available, day and night lengths, and day and night weather conditions. About one half the birds in the flock of 20 died of starvation during the main experiments, even though the food bucket was often unattended. Birds dying were low in the dominance hierarchy and were presumably kept from feeding through unobserved behavioral interactions. Weather effects on food consumption increased between October and November, but whether this was due to the greater effect of competition in the larger October flock or to the onset of more severe weather in November is unknown. In a second experiment with a captive pair (so that competition was minimal) daytime weather was the most significant factor, the birds roosting at night in a shelter in the cage. A seasonal change in the importance of rainfall was confounded with a seasonal change in the incidence of rain.

As noted above several of Swingland's results can be attributed to either of two explanations. It would have been possible to resolve the uncertainty about the October and November results had the data been analyzed with respect to the order of access by individuals to the food bucket, but this analysis was apparently not performed. A second point that concerns me is the absence of body weight as a variable in the multiple regression analysis. Existence energy is a power function of body weight in most birds, so one has to ask whether the weight range of the birds used in this study (186-532 g between individuals and times) would not have had an important effect on the weight-specific food consumption of individual birds.—Raymond J. O'Connor.

MORPHOLOGY AND ANATOMY

17. A preliminary method to determine sex in Canada Geese by skin transparency. J. Rench, W. J. Rudersdorf, and J. P. Harley. 1976. *Inland Bird Banding News*, **48**(2): 69-70.—Humeral feathers were removed on the underside of the wing about two inches from the body. In females the epidermis appeared transparent whereas in males it was white and opaque. This method of sexing Canada Geese (*Branta canadensis*) agreed from 92 to 94% of the time with sex determinations made by cloacal examination.—Roger B. Clapp.

18. The lung-air sac system of the Gruidae (1). M. Kadosaki. 1976. *Tori*, **25** (99): 47-50. (In Japanese with English summary.)—Concisely detailed and illustrated for future comparisons of *Grus japonensis* with anatomy of other species. Of all the main air sacs the lumbo-sacral is absent. It is suggested that this is compensated for by abdominal sac development. Pneumatic bones and diverticula are numerous.—Leon Kelso.

ZOOGEOGRAPHY AND DISTRIBUTION

19. Notes on distribution and ecology of the Syrian Woodpecker in the Ukraine. (Materialy k rasprostraneniyu i ekologii siriiskogo dyatla, *Dendrocopos syriacus*, na Ukraine.) I. Marisova and A. Butenko. 1976. *Vest. Zool.*, **1976**(2): 28-34. (In Russian with English summary.)—Details of range extension northward through Ukraine and Moldavia are given, but chief among other notes is the feeding by adults and young on pulp of apricot seeds. Wedged in a tree bark cleft, the fruit is stripped off and the pit split open by 3 to 5 minutes of chiseling blows by the bill. They also feed on common or "English" walnuts, which require 15 to 20 minutes of hammering to open.—Leon Kelso.

SYSTEMATICS AND PALEONTOLOGY

20. Preliminary diagnoses of two extraordinary genera of birds from Pleistocene deposits in the Hawaiian Islands. S. L. Olson and A. Wetmore. 1976. *Proc. Biol. Soc. Wash.*, **89:** 247-257.—Two unusual species of new genera are described, one an ibis, the other a goose. The ibis is small, flightless, and with stout, kiwi-like hind limbs. The goose is large, also flightless, and with blunt, bony, toothlike projections on both jaws.— Bertram G. Murray, Jr.

21. Fossil woodcocks: an extinct species from Puerto Rico and an invalid species from Malta (Aves: Scolopacidae: *Scolopax*). S. L. Olson. 1976. *Proc. Biol. Soc. Wash.*, **89:** 265-274.— Olson examined the remains of a species originally described by Wetmore as a snipe, *Gallinago anthonyi*, from Puerto Rico, and he has identified them as belonging instead to a woodcock. This extinct, insular species is different from *Scolopax minor*, the extant North American species, in lacking the latter's specializations of the bones of the wing and pectoral girdle associated with the attenuation of the outer primaries.

Olson considers another supposed woodcock, *Scolopax ghardalamensis*, described by Fischer and Stephen from Malta to be the extant *Coturnix coturnix*. —Bertram G. Murray, Jr.

22. A jacana from the Pliocene of Florida (Aves: Jacanidae). S. L. Olson. 1976. *Proc. Biol. Soc. Wash.*, **89:** 259-263.—A new species of jacana is described from the Middle Pliocene of Florida on the basis of a portion of a tarsometatarsus and a paratype coracoid. It is larger than the Recent *J. spinosa*.— Bertram G. Murray, Jr.

BOOKS AND MONOGRAPHS

23. Systematics and Evolutionary Relationships among the Herons (Ardeidae). Robert B. Payne and Christopher J. Risley. 1976. *Misc. Publ. Mus. Zool., Univ. Mich.*, No. 150. 115 p. $4.98—It is not uncommon for biologists to form deep loyalties to a particular methodology and then miss the potential benefits of other approaches. This is reinforced in most of us by the universal longing to be right-in-the-first-place, but is seldom realistic. In the field of systematics one can classify the systematists themselves according to their methodological preferences and be reasonably safe from the pitfalls of ideological convergence. The categories in such a scheme would be phentics, cladistics, and phyletics. Each of these has its own goals, its own methods, and its own devoted following. Perhaps *because* Payne and Risley are novice systematists, they are freed from the traditional constraints of using only one approach. The good news is that they have chosen an eclectic route, becoming the first ornithologists to apply all three perspectives in the taxonomy of a single group, the herons.

Surprisingly, the three approaches produced generally similar results. And the authors, believing that three analyses are better than one, claim that this agreement lends robustness to their taxonomic conclusions. So armed, they offer a new classification that disagrees in many places with the precedent arrangements of Peters ("Check-list of the Birds of the World." Vol. I. Harvard Univ. Press, 1931) and Bock (Amer. Mus. Novit. No. 1779, 1956).

The methodological questions, however, are too fundamental to end there. Systematists will wonder if the agreement is a reflection of evolutionary Truth (as the authors hope) or of circular logic. Is it fair to test three different approaches by running them on the same batch of data, or is the choice of characters an inherent part of each approach? Does it count as "agreement" if the data occasionally produce two equiprobable phylogenies and the authors choose the one that best matches their other analyses? How important are the particular computer programs that Payne and Risley selected to represent each approach? I will not try to answer these questions specifically, but I will say that the compound case built by Payne and Risley far exceeds anything yet produced for the herons. Both the skeletal material and their raw character-state data are available for anyone who wishes to analyze them differently.

The monograph itself is polished, clearly written, and well organized. About one quarter of it is devoted to character descriptions, one quarter to the methodology and its rationale, and one half to interpretation and conclusions. Each skeletal character is illustrated with an excellent line drawing showing the character-states. By following the descriptions and illustrations I could quickly find and verify the skeletal features. (Such detail is partly a luxury of monographic size.) The critical reader can check most of the assumptions and logic—except for the internal secrets of the computer programs for which one must consult the original references. The descriptions are tidily summarized in tables of character-state assignments, and all the analyses are summarized in figures. Conclusions are presented and defended, species-by-species, culminating in the final classification. The actual specimens examined are identified in the appendix. I found only three typographical errors (the worst of which had already been hand-corrected before mailing) and virtually no factual errors. My criticisms, therefore, only concern errors of omission and differences of interpretation.

The need for this revision of the Ardeidae is apparent when one realizes that there has been only one serious reclassification attempt for the family in the past century. Twenty years ago Bock tackled what had been a splitter's paradise in order to make usefully modern (read: broad) genera. His treatment was based heavily on plumage characters and on the limited amount of life history information available at the time. Bock's revision was a welcome and radical shake-up: he chopped the number of genera in half, thereby giving each some mnemonic value. However, by not publishing his character-state assignments, Bock left future workers with little tangible evidence to weigh. Consequently his opinions lack solid support. If Payne and Risley's work seems hard to authenticate because of the mysterious computer, Bock's is more so—for there are no original sources one can consult for the assumptions behind Bock's thinking of 1956. Payne and Risley point out correctly that Bock's display plumes are dubious taxonomic characters in the first place because they show evidence of convergence, cannot be applied to outgroups, and seem to be evolutionarily plastic: "Plumage is probably of limited value in reconstructing estimates of remote evolutionary history because it is so often associated with species recognition signals and sexual selection and so has diverged rapidly among even closely related species."

Another reason for the new revision is that the past two decades have seen an enormous surge of new information about heron general biology. Payne and Risley tapped this source from time to time (although not always smoothly; see below) and made frequent use of such other lines of taxonomic evidence as proteins, tarsal scutes, plumage patterns, and behavior. Thus they have added a new voice to the taxonomic opinion-pool. Now they will have to stand by as time tests their conclusions.

Payne and Risley relied primarily on osteological characters for several well-explained reasons: many bone variables change in a discontinuous manner through the family, many can be treated as independent characters, and (most importantly) many can be found in related taxa so outgroup criteria can be applied. The authors found 33 such discontinuous skeletal characters and scored the specimens into 2 to 4 character-states for each. Their material was quite extensive: 47 species were represented by 1 or more complete skeletons, 6 others by partial skeletons, and only 9 unavailable (none of these 9 were crucial to the classification). In the *phenetic* analysis, unweighted characters were compared by principal components analysis, PRIM Network, and cluster analysis for raw similarities/differences between species. In the *cladistic* analysis, evolutionary

pathways were estimated according to Estabrook's compatability criteria. In the "*phyletic*" analysis the authors reconstructed a hypothetical heron ancestor from character-states shared with the outgroups (storks, ibises, spoonbills, hamerkop, etc.). Payne and Risley named their creation PRIMARDEA, which looks suspiciously like a pun on "primordial." Estimates of how modern herons could have descended parsimoniously from PRIMARDEA were generated by a Wagner Tree program.

The Payne and Risley classification is certain to be controversial. Part of the debate will arise from the thin spots in their analysis, part will arise from taxonomic inertia (20 years of using Bock's classification), and part will arise as new, contradictory evidence is produced. Scrutiny of Payne and Risley's generic decisions shows that many are based on only two or three actual characters. Counter-opinions, therefore, will not necessarily require great piles of evidence to call these decisions into question. A few of their more interesting changes are discussed below.

Payne and Risley's analysis confirms the recognition of four distinct groups within the Ardeidae: day-herons, night-herons, tiger-herons, and bitterns. They disagree, however, with Bock's opinion that the latter two groups are "primitive." The new analysis of shared outgroup characters points strongly to the day- and night-herons as more primitive than the bitterns and tiger-herons. *Zebrilus*, about which virtually nothing is known, shows stronger affinities to the bitterns than to its former group, the tiger-herons. *Syrigma* and *Pilherodius* are closer to the day-herons than to the night-herons. Payne and Risley prefer to elevate these four groups to subfamily status so they can use tribes for lower groupings. For example, they recognize a monotypic Cochleariini to distinguish the Boat-billed Heron from the other night-herons of the Nycticoracinae and provide a new tribe, Zebrilini, within the Botaurinae.

A few surprising changes are found in the generic treatment of the Ardeinae (day-herons). According to the skeletal data there is little reason to have more than six genera, of which one half (*Pilherodius, Syrigma,* and *Agamia*) are monotypic. Thus there remain just three major day-heron genera (*Ardea, Egretta,* and *Ardeola*) with only scant evidence to separate *Ardea* and *Egretta*. Neither the Wagner Tree nor the cladistic analyses distinguished *Egretta* from the larger members of *Ardea* but one phenetic analysis did. This put the authors in the quandry of how to reflect this complexity with simple binomial names and led them to another problem: what to do with the Great Egret ("*Casmerodius*" *albus*). Several skeletal characters indicate that "*Casmerodius*" is closer to *Ardea* than to *Egretta*, but that case is tarnished by three other lines of evidence. First, they point out that the tarsi are scutellate, ". . . as in some of the larger *Ardea*." This suggests affinity to *Ardea*, but only because they failed to mention here that all *Egretta* species have scutellate tarsi. Second, they cite head-tilting (a foraging tactic) as a behavioral similarity with *Ardea* but again neglected to report that it also has been found in several *Egretta* species (A. J. Meyerriecks, *Publ. Nuttall Ornithol. Club*, 2, 1960). Third, they concede that the display literature suggests that the Great Egret communicates more like *Egretta* (although my unpublished data show it to be intermediate). The use of the literature to support their argument is too selective. If they want to call the Great Egret *Ardea alba* because of its skeletal features, that is their prerogative. But *alba* seems intermediate between the two groups. Because these genera are questionably separate anyway, I would prefer to see them lumped together as a very broad *Ardea*. A decision assigning *alba* to either of the two split genera seems premature at this time.

The Reddish Egret (*E. rufescens*) has several skeletal idiosyncracies which may or may not constitute a single adaptive complex related to the species' peculiar feeding behavior. For the moment Payne and Risley uneasily leave it in *Egretta*. Bock's tentative separation of "*Hydranassa*" (*rufescens, tricolor, caerulea, ardesiaca,* and *picata*) from *Egretta* was not supported by the skeletal evidence, so "*Hydranassa*" was submerged.

Payne and Risley found that "*Butorides*" (the green herons) and *Ardeola* (the pond herons) are osteologically indistinguishable except for size. The green herons, which now comprise but a single species, *striata*, were therefore merged with *Ardeola*, taking the intermediate *rufiventris* with them.

The biggest surprise, however, was the shifting of the Cattle Egret ("*Ardeola*" *ibis*) into *Egretta*. It has marked skeletal differences from *Ardeola* and strong

similarities with *Egretta*. Previous taxonomists have had trouble finding a good place for *ibis*, and the existing choice was between *Ardeola* and a monotypic genus, "*Bubulcus*." Payne and Risley circumvented that by finding it a new home. Again, however, I was disappointed by their misrepresentation of the behavioral evidence which they claimed ". . . supports the idea that Cattle Egrets are related to the other egret species" (p. 83). This implies that a comparison of *ibis* with species' descriptions for both *Egretta* and *Ardeola* revealed behavioral affinities with the former. But there are no detailed accounts for the latter! If one wished to be very tricky and use "*Butorides*" *striata* as the *Ardeola* representative, such a comparison could be made. I tried this and still found no behavioral reasons for moving *ibis* into *Egretta*. I believe that the authors should not have stretched the available information quite so far to make their case. The osteological data must stand alone.

Payne and Risley's heron monograph makes several important contributions, both to systematics and to "nontaxonomic" biology. It is already generating excitement by offering many new ideas for others to ponder, explore, test, and attack. It also provides a valuable, up-to-date bibliography of heron literature and some fresh attention to the many gaps in our knowledge of heron general biology. Heron students will no doubt use this volume as a basic resource while planning evolutionary research. But the main impact of this study will surely stem from its most novel feature, the combining of systematic philosophies. Some will concur with the authors (and me) that the agreement they found probably does strengthen the conclusions. Perhaps the herons are such an ancient family, with such clearly defined evolutionary subdivisions, that any of our current methods are sensitive enough to approximate Truth closely. Others will hasten to uncover flaws in the execution of the multiple approach. I see this as no great burden for the authors. They have demonstrated a new tool (the combining of "descriptive phenetic and interpretive phylogenetic methods") for avian systematists to refine and use on other taxa.—Douglas Mock.

24. A Field Guide to the Nests, Eggs, and Nestlings of British and European birds. Colin Harrison. Boston, Demeter Press, Inc. 432 p plus 60 color plates, many line drawings. $12.50.—This innovative guide is intended as as a supplement to the basic identification handbooks. Although the emphasis is on eggs, nestlings, and nests, in that order, a surprising amount of good information on breeding habits of European birds is packed into a small space. The conservation and protection of nesting birds is emphasized.

The book includes keys to nests, eggs, and nestlings, and a short Introduction that briefly summarizes the more important aspects of breeding biology: nests and nest building, breeding season, egg shape and color, incubation, behavior during hatching and the nestling period, etc. The bulk of the book is devoted to a systematic listing of species, giving for each one the following information: description of nesting habitat, nest, breeding season, eggs, incubation, description of nestling, nestling period. Gaps in information are clearly acknowledged, which may stimulate further research on the rarer and less-studied species.

Most readers will be particularly impressed with the 60 color plates. Sixteen plates, by Philip Burton, show the young (mainly precocial) of 145 species. The remaining 44 plates consist of color photographs of the eggs of over 700 species. The plates are clear, attractive, and accurate, and in my copy color control seems to be excellent.

In providing thumbnail sketches of the breeding habits of each species, the author, obviously, could not deal with the variability of biological creatures in a few words. Thus, data on breeding seasons, for example, are quite general. In reading the shorebird text, I found that information on social systems was less informative than might be expected. For example, no mention is made of the polyandry of Dotterels, the double-clutch of Sanderlings, or the fantastic pattern of successive bigamy shown by Hildén for Temminck's Stint. Simplification, of course, is unavoidable, but it does seem unfortunate that here (and throughout the text) there are no references to original literature, which might lead the curious reader to dig deeper.

Because of its highly specialized nature, it is not likely that this book will be used as a "field guide." However, it should find extensive use in school classrooms, small museums, or local nature centers, where material is brought for identification. It should be useful to those desiring a brief description of the

nesting habits of a wide variety of species. And it may even find use by curators who wish to confirm the identification of chicks or eggs taken in by-gone days.

The book also has a potentially important value to systematists. Several recent studies (not mentioned by Harrison) have shown that the color patterns of downy young (waterfowl, grebes, shorebirds) provide strong evidence for determining phylogenetic relationships. And, as zoologists have long known, there is a strong taxonomic component to the color and pattern of eggshells. The convenience of having illustrations of large numbers of young and eggs in one place may give imaginative students ideas for future studies. Where else, for example, including museums, can one find excellent illustrations (or study skins) of the young of three bustards?

Harrison's book is clearly a labor of love. Because many of the non-passerine species treated are represented in the Neararctic fauna, it will be useful to American workers. Take a look at it. I think you will be impressed.—J. R. Jehl, Jr.

25. North American Game Birds of Upland and Shoreline. Paul A. Johnsgard. 1975. Lincoln, Univ. Nebraska Press. 183 p., illus. $6.95 (paperback).—This attractive book should appeal not only to birders but to hunters. Indeed, I think Johnsgard's intention is to interest hunters in the broader aspects of the biology of game birds. Johnsgard himself converted from hunter to biologist.

North American game birds include the order Galliformes, the order Gruiformes, the American Woodcock and Common Snipe (order Charadriiformes), and the Band-tailed Pigeon, Mourning Dove, and White-winged Dove (order Columbiformes). With the exception of the gallinules and the rails, which are discussed in single chapters, each species' account includes several sections: Other vernacular names, Range, Identification, Field marks, Age and sex criteria, Habitat and foods, Social behavior, and Reproductive behavior. Identification refers to a detailed description, whereas Field marks refers to distinguishing features observable in the field. Social behavior includes remarks about territoriality, sexual bonding, and makeup of the covey, but Reproductive behavior concerns nesting, clutch size, and incubation behavior.

The book is profusely illustrated with color photographs, black-and-white photographs, and line drawings, almost all by the author. Distribution maps complete the species' presentation.

There is a glossary of terms, clearly meant for the non-biologist, keys to identification, and a list of references.

All in all, this is an excellent little book.—Bertram G. Murray, Jr.

26. Flamingos. Janet Kear and Nicole Duplaix-Hall (eds.). 1975. Berkhamsted, T. & A. D. Poyser. 246 p., illus. £8.00.—All you wanted to know about flamingos and more can probably be found in this book, which presents a series of papers given at the first International Flamingo Symposium held at the Wildfowl Trust in Slimbridge, England, in 1973. The 31 contributed papers fall into four groups: population ecology and conservation, flamingos in captivity, ethology and taxonomy, and physiology.

Fifteen papers discuss the distribution, migration, breeding biology, and conservation of the six forms (five species) recognized by the symposium participants. Most colonies of breeding flamingos are located in remote and hostile areas that are difficult to reach for humans and other predators. But the severity of the environment causes extraordinary fluctuations in breeding success, very good years being followed by totally unsuccessful ones. Increasing human populations and development, however, are threatening the large, nonbreeding Lesser Flamingo populations at Lake Nakuru, perhaps the most pressing flamingo conservation problem at the present time.

The collection and transportation of flamingos for display or research at zoos are discussed in order to alleviate unnecessary mortality caused by faulty procedures. But the participants stress the need for providing conditions in zoos that will promote successful breeding with the goal of captive birds maintaining their own populations. Several chapters deal with the experiences at different zoos and describe the requirements for breeding, diets, and breeding behavior. The editors provide a chapter on the present status of flamingo breeding in zoos. They are optimistic: "When more zoos know the basic facts about flamingo behavior and husbandry, breeding should not be difficult, especially in warm

climates." Indeed, since 1956 when the first successful breeding occurred outside Hialeah race track (the Caribbean Flamingo at the San Antonio Zoo), at least 38 zoos have bred flamingos at least once. Twenty zoos north of 45° N have bred flamingos. Nevertheless, zoos are still dependent upon wild populations to replenish their stocks, and despite the most conscientious collecting, there is much disturbance, stress, and mortality imposed on wild flamingos.

A chapter by M. P. Kahl and another by A. Studer-Thiersch describe the social displays of flamingos, and a short chapter by T. Clay on feather lice complete the section on ethology and taxonomy.

The physiology section is mostly concerned with pigmentation with long chapters by D. L. Fox and by H. Thommen describing the biochemistry of carotenoid pigmentation. Shorter chapters describe the diets used at various zoos and the various problems that afflict flamingos in captivity from sore feet to tuberculosis.

The book is profusely illustrated with black-and-white and colored photographs showing the birds, their behavior, and various natural and zoo environments. There are nine appendices containing a variety of miscellaneous information including egg sizes, weight, wing length, and gut measurements of adults, and instructions on how to pinion a flamingo. A bibliography of 303 references and an index complete this book. The editors, participants, and publisher should be commended for this fine effort.—Bertram G. Murray, Jr.

27. Rare Birds in Britain and Ireland. J. T. R. and E. M. Sharrock. 1976. Berkhamsted, T. & A. D. Poyser. 336 p. £6.00.—What geographic region is most ideally situated for producing a large list of rare birds? Britain and Ireland—the westernmost refuge for eastern European and Asian stragglers, the first landfall for North American birds reaching Europe, and halfway between the Arctic and northern Africa—must be a prime candidate. No less than 8,000 individuals of 221 species have occurred there since 1957, although some of these rarities are regular and numerous, such as the Pectoral Sandpiper with 488 records between 1958 and 1972, the 15-year period the authors report in detail. Except for the rarest species, each species receives a two-page treatment with a brief description and the geographic range followed by a histogram showing occurrences by seven-day periods throughout the year, by another showing spring and fall occurrences by year, and by maps showing the locations of spring and fall records.

Although there is an overall trend of increasing numbers and species from 1958, which the authors attribute to the enormous increase in active birdwatchers, there is a diversity of trends when the records of each species are analyzed separately. Some rare species are becoming rarer, some are certainly increasing with a few even establishing breeding populations, and some are fluctuating. Interpreting the trends in the status of vagrants, though, is a difficult business subject to many variables of which the authors are well aware. But the main focus of this book is the reporting of the data as they exist.

The quality of the records is assured by the establishment of the *British Birds* Rarities Committee and other reviewing committees, which determine the acceptance or rejection of all records of rare birds. While we may be confident of the accuracy of the records, it would have been useful to include in the book the nature of the records, whether the birds were seen, photographed, captured, or collected.

Each of the 221 species is illustrated, by one of five artists, with a black-and-white sketch intended not only to depict the species but to convey the birds "jizz" as the authors say. These have not always been successful, at least with respect to some of the American landbirds.

The American species are not always in the American sequence. Readers interested in a particular species should first search the index.

In addition to the species' accounts are summaries of the occurrences of American shorebirds and American landbirds, summaries of short-term (1958-1972) and long-term trends, a map of the geographical occurrences of all rarities, a list of 23 species recorded in the area but not since 1957, and accounts of 11 "category D" species, those that are thought to be escapes or known to be ship-assisted vagrants.

This book clearly shows the importance of documenting the occurrence of rarities because status changes provide an additional source of information on the

population dynamics of species, the history of colonizations, and perhaps something about migration routes.—Bertram G. Murray, Jr.

28. Birds of New Jersey, Their Habits and Habitats. Charles Leck. 1975. New Brunswick, N.J., Rutgers University Press, 190 p. $12.50.—This small book, whose cover title lists only "Birds of New Jersey," consists of two parts, avian communities of New Jersey and records of New Jersey birds, and three appendices, an annotated checklist, accidentals, and aids to bird watching. In the introduction, the author claims two innovations, an ecological approach based on discussing the state's birds by habitat divisions and emphasis on the common birds. Readers who assume the first part, on avian communities, will give detailed descriptions of physical or biotic environments will be disappointed. Most state bird books give much more. Leck's approach is to discuss, in a style I find wordy and anecdotal, the habitats at eight of his favorite birding localities.

Part 2 consists of chapters on seasonality of New Jersey's birds, and Christmas and "Big Day" bird counts. The 14 pages on seasonality include one page of text and several tables, including one of about nine pages that lists migration dates, by month only. The 17-page chapter on Christmas counts and Big Days includes a 7-page table listing total number of individuals for each species seen on all New Jersey Christmas counts for a recent 4-year period. Why only four years, when many Jersey counts have continued several decades? Analyses of long-term observations would seem more likely to reveal significant changes. Leck's claim is an emphasis on common birds. Therefore, why also are there no analyses of breeding bird censuses? Several careful studies of different habitats and of long duration have been published but never analyzed. Except for a personal list filling another two pages, most of the information on Big Day counts has been published elsewhere.

Appendix 1 is the annotated checklist. Scientific names are not used anywhere in the book, and nowhere do I find mention of the criteria used for including a bird in the list. The English name of each species is followed by a few words explaining local status. I find these erratic and therefore misleading. As examples, the Chukar is listed as introduced from the west, the House Finch only as introduced, and no mention of origin is given for Rock Dove, Starling, House Sparrow, etc. The Ruddy Turnstone and Razorbill are listed as coastal, but no comment on habitat is made for the Sanderling or the other alcids. Several English bird names are wrong according to the source used, the American Ornithologists' Union (e.g. American Goldeneye, Northern Harrier, Kiskadee).

Appendix 2 lists records of the accidental birds of a dozen recent years. Appendix 3, aids to bird watching in New Jersey, includes a listing of literature sources, bird clubs (has the Westfield Bird Club that nurtured my youthful interest in birds really moved to Cranford?), and birding localities. Many will be surprised to find the famous and extensively censused Troy Meadows is no longer in Morris County, and no birding localities listed for Ocean County, which includes Manasquan Inlet, Beach Haven Point, and Tuckerton, to name but a few.

In summary, I found "Birds of New Jersey" disappointing, and I think others will too. It will be of little use to biologists and experienced birders as a reference, and beginners will soon outgrow it.—Glen E. Woolfenden.

29 Bird Sounds. Gerhard A. Thielcke. 1976 (1970). Ann Arbor, University of Michigan Press. 190 p. $2.95 (soft), $6.95(hard).—This book is apparently a verbatim translation of "Vogelstimmen" published in German in 1970. It is a popular treatment of many aspects of bird vocalizations, vocal behavior, and the study of bird sounds. The author has done a good job of clarifying some of the jargon and ordering the complex assemblage of information available at the time. The time, unfortunately, is 1968, there being only a single reference (to a paper by Thielcke himself) as late as 1970. The ensuing years have seen the publication of numerous papers on all aspects of bird sounds with important technical advances occurring in the area of sound analysis. The book has some strong points, nonetheless, one of which is a clear presentation of the technique and art of the sound spectrogram, including comparisons with oscillograms (not especially well illustrated) and with amplitude tracings. The last is particularly important, since, although most sound spectrographic machines have amplitude analysis capability, very few bird students actually use

this technique. It is becoming increasingly apparent that amplitude characteristics, inadequately described on the standard spectrogram, convey important information, and I predict that this technique will become increasingly important in the study of animal communication. Other aspects of sound, e.g., modulations, are treated only cursorily. There is a good section on sound production and interesting coverage of the evolution of vocal signals and on speciation.

Coverage of sound function and species and individual recognition are brief and clear. The chapter on learning, including the subject of dialects, is long and interesting. However, so much material has accumulated on these subjects in the past eight years that the coverage must be considered only an historical review, although it is valuable in that respect.

The most valuable part of the book is the material summarizing Thielcke's own important work on the European creepers, which provides a valuable English digest of his work. In addition, the book serves as a useful compilation of much European literature on bird sounds. Otherwise it is out of date, and presented as a new work it could only convey a wrong impression of the current state of the art. The University of Michigan Press, has, it seems to me, been remiss in not stating that this book is essentially a translation, and in not indicating who produced the translation. The English is excellent and clear with few lapses. I am confused by the use of the term "strophe" which sometimes appears to indicate a figure or single syllable on a spectrogram and other times appears equivalent to a phrase with a figure being repeated several times. Despite these criticisms the low cost of the paperback edition commends it to the amateur who wants a clear presentation of different aspects of the study of bird song and to the student who desires an historical summary.—Michael Gochfeld.

30. The Choice of Prey and Modes of Hunting of Predatory Birds with Special Reference to their Selective Effect. G. Rudebeck. 1950-51. *Oikos*, **2**: 67-88, **3**:200-231. (Available as reprint from the Ornithological Society of Skåne, Ecology Building, Helgonavagen 5, S-223 62 LUND, Sweden). $2.50.—In offering this reprint of two classic papers by Gustav Rudebeck, the Ornithological Society of Skåne has done a service to ecologists, ethologists, and raptor biologists. Rudebeck's papers are a compilation of extensive observations of hunting behavior of four species of diurnal raptors during fall migration in southern Sweden. The four species, Sparrowhawk (*Accipiter nisus*), Merlin (*Falco columbarius*), Peregrine (*Falco peregrinus*), and Sea-eagle (*Haliaeetus albicilla*), all feed to a greater or lesser extent on birds, and it is specifically predation on birds that Rudebeck considers.

Two important aspects of predation that emerge from this publication are (1) the contest between migrant raptors and avian prey seems generally to favor heavily the prey, and (2) potential prey that have injuries or behavioral abnormalities apparently stand a much greater chance of being taken than potential prey that are healthy and normal in behavior. For all four raptor species Rudebeck reported that only about 5% of capture attempts were successful, and he discussed in detail the circumstances that made the kills possible. Success for the raptor seemed generally to be a case of chance advantage, provided by features of topography or by other circumstances which allowed close approach and surprise attack. For the most part it appears that small birds that become aware of the approach of a raptor at a distance are able to avoid capture.

Rudebeck's 5% success rates are lower than success rates recorded for other raptor species with other types of prey. For example, Wakely (*Raptor Research*, **8**: 67-72, 1974) reported a 15% success rate for hunting attempts of a nesting male Ferruginous Hawk (*Buteo regalis*) with mammalian prey; Collopy (*Raptor Research*, **7**: 25-31, 1973) found 44% success rate in hunting attempts of American Kestrels (*Falco sparverius*) feeding primarily on invertebrates on their wintering grounds; Ueoka and Koplin (*Raptor Research*, **7**: 32-38, 1973) observed a 62% success rate for dives of nesting Ospreys (*Pandion halietus*,) and Wiley (in *Ornithol. Monogr.* no. **20**: 46, 1976) found a 40% success rate for hunting attempts of newly-independent fledgling Red-shouldered Hawks (*Buteo lineatus*) preying on invertebrates, herps, and mammals. However, the differences between these higher figures and those of Rudebeck may be a function of a variety of factors in addition to the types of prey taken. It seems likely that such considerations as age of the raptor, age of the prey, availability of cover, familiarity of the terrain to the raptor and to the prey, state of hunger in the raptor, and

overall abundance of the prey may all have important effects on observed success rates. It should be emphasized that Rudebeck's observations were of raptors in migration hunting over unfamiliar open terrain. Presumably many of the raptors were juveniles, as were many of the prey. Whether the hunting-success rates observed can be considered typical for the species in other seasons and circumstances remains to be seen.—Noel F. R. Snyder

31. Composition and Distribution of USSR Avifauna. Non-Passeriformes. (Sostav i raspredelenie ptits Fauny SSSR. Nevorobinye.) L. S. Stepanyan. 1975. Moscow, "Nauka" Press. 369 p. (In Russian; price uncertain.)—This account of the composition, systematics, and distribution of all non-passerine birds authentically recorded in the republic includes additions from recent ornithological explorations spanning the past 20 years. It is, thus, recommended to students, professional or otherwise, as the most complete summation of recorded information, a landmark in Soviet avifaunistic research. Compared with other bird manuals of modern vintage, it appears experimental. The author attempted to provide maximum substance with a minimum amount of print. There are no illustrations or keys. For descriptions, there are sparse diagnostic details for subspecies, and these only in cases of two or more forms of a species. As a whole, real emphasis is on the subspecies, for which the ranges are more detailed than in the AOU Check-list or in the accounts of Bent. For each species the general range delineated is worldwide. It will be interesting to watch whether this stratagem for economy in print is adopted by other writers.—Leon Kelso.

NOTES AND NEWS

Fall NEBBA Meeting—The annual meeting of NEBBA was held 1-3 October 1976 at the Vermont Institute of Natural Science, Woodstock, Vt. At the Council Meeting on 1 October (13 councilors and officers present) reports were read from the Treasurer, Investment Committee, Editor of *Bird-Banding*, Mist Net Committee, Membership Committee, and Bergstrom Memorial Research Fund Committee. The Council extended a special vote of gratitude for NEBBA to Donald C. Alexander who has kindly audited the books for the past two years.

At the annual Business Meeting on 2 October, the Nominating Committee's report was read by Gordon Johnson. The slate of officers for the upcoming year is as follows:

President	James O. Seamans
Vice-president	James Hallett
Secretary	Deborah V. Howard
Treasurer	Robert Shaw
Councilors	(1-yr. term)
	Abbott Fenn
	(4-yr. terms)
	Mrs Primus Bond
	Mrs. Matthew P. Drennan
	John P. Merrill

An interesting papers session included presentations by Marion Metcalf, Jonnie Fisk, and Scot Sutcliffe. Field trips and banding consumed the after-