RECENT LITERATURE

Edited by Bertram G. Murray, Jr.

BANDING AND LONGEVITY

(See also 38, 43, 44, 46, 47, 52, 55)

1. A permanent site waterfowl trap. G. C. Arthur and D. D. Kennedy. 1972. *J. Wildl. Mgmt.*, **36**(4): 1257-1261.—The authors describe the construction and use of a 50 X 100 foot concrete based trap for which they state that an average trap night would yield 360 geese or 500 ducks. From 1966 through 1971, 83,202 ducks and geese were captured in three of these traps in southern Illinois.—Roger B. Clapp.

2. Banding worksheet for western birds. Tree Swallow (*Iridoprocne bicolor*). C. T. Collins. 1972. *West. Bird Bander*, **47**(1), suppl., 1 p.

Banding worksheet for western birds. Violet-green Swallow (*Tachycineta thalassina*). C. T. Collins. 1972. *West. Bird Bander*, **47**(1), suppl., 1 p.

Banding worksheet for western birds. Lazuli Bunting (*Passerina amoena*). J. M. Sheppard. 1972. *West. Bird Bander*, **47**(2), suppl., 2 p.

Banding worksheet for western birds. Common Snipe (*Capella gallinago*). K. A. Arnold. 1972. *West. Bird Bander*, **47**(2), suppl., 1 p.

Banding worksheet for western birds. Summer Tanager (*Piranga rubra*). A. M. Rea. 1972. *West. Bird Bander*, **47**(3), suppl., 2 p.

Western bird banding worksheet. Lesser Goldfinch (*Spinus psaltria*). J. M. Sheppard. 1972. *West. Bird Bander*, **47**(4), suppl., 2 p.—The guides to aging and sexing the birds listed above may be of interest to banders who are not aware of them and who live in areas where these birds may be encountered. The worksheets offer keys similar in format but somewhat more detailed than those found in Wood's "A bird-bander's guide to determination of age and sex of selected species." The sheets are available from the editor of *Western Bird-Bander* at $.50 per sheet.—Roger B. Clapp.

3. Fifteenth ringing report. C. C. H. Elliott and M. J. F. Jarvis. 1972. *Ostrich*, **43**(4): 236-295.—Of the 60 pages in this report, 56 are devoted to a table that includes the number of each species banded under the auspices of the South African Ornithological Ringing Scheme from its inception in 1948 through 30 June 1970. The number of each species recovered is also listed. A typical ringing report, this one is notable for its blatant waste of space with an average of only 11 species listed per page. The authors note that "It is regretted that an error in the printer's estimations has unexpectedly necessitated this division of the 15th Ringing Report into two parts" (the second part to include the "Schedule of Birds Recovered"). Hopefully, the second part of this report can be presented in a somewhat more economical format.—Roger B. Clapp.

4. Bird ringing in the Galapagos. M. P. Harris. 1972. *Not. Galapagos*, **19-20:** 3-7.—Through 1971, 13,712 birds were banded including 5,910 Waved Albatrosses (*Diomedea irrorata*), 1,901 Madeiran Storm Petrels (*Oceanodroma castro*), 1,300 Swallow-tailed Gulls (*Creagrus furcatus*), 773 Audubon's Shearwaters (*Puffinus lherminieri*), and 625 Flightless Cormorants(*Nannopterum harrisi*). Of more general interest are data presented for seabirds on age of return to the colony, age of first breeding, and greatest longevity so far attained. Age of first breeding was eight years for the shearwater, three years for the Blue-footed Booby (*Sula nebouxii*), and four years for the albatross, cormorant, and gull. Through 1971 the maximum elapsed time between banding and recapture for birds banded as adults was 11 years for the albatross, shearwater, storm petrel, and gull, and 9.5 years for the cormorant, booby, and Brown Noddy (*Anous stolidus*). Harris also notes some of the more interesting recoveries obtained and suggests where the emphasis of future banding activities might well be best placed. Roger B. Clapp.

5. Gull banding in Montana. L. M. Moos. 1973. *Proc. Mont. Acad. Sci.*, **32**: 20-23.—Through 1971, 15,805 California Gulls (*Larus californicus*), 12,535 Franklin's Gulls (*L. pipixcan*), and 923 Ring-billed Gulls (*L. delawarensis*) were banded, all but a very few of them at Arod and Freezeout lakes. Moos lists banding totals by area and year and enumerates by state, province, or country the number of returns and recoveries for each species. The data presented seem a scant return for the amount of time and effort that were expended in banding these birds.—Roger B. Clapp.

6. A report on the banding of Barn Owls. D. Purchase. 1972. *Austral. Bird Bander*, **10**(4): 74-75.—Forty-three *Tyto alba*, 25 nestlings and 18 adults, were banded in Australia through 30 June 1971. Of the five recoveries obtained to date, three were of birds banded as adults and recovered either in the vicinity of the breeding place or within 65 km of the banding locality. The two birds that had been banded as nestlings had dispersed widely from the banding locality in their first year, one having been recaptured 840 km NW, the other having been found dead 250 km NE.—Roger B. Clapp.

MIGRATION, ORIENTATION, AND HOMING

(See also 34, 35, 45, 51, 52, 55)

7. The 1972 autumn hawk count at Tott's Gap, Pennsylvania. D. S. Heintzelman. 1973. *New Jersey State Mus. Sci. Notes*, No. 12: 1-3 (mimeo).—Comparison of Tott's Gap hawk counts demonstrates that far fewer individuals pass the area than pass eight miles to the northeast at Raccoon Ridge, New Jersey (see next review). A difference in topography is offered to explain the paucity of hawks at Tott's Gap.—M. Ralph Browning.

8. The 1972 autumn hawk count at Raccoon Ridge, Warren County, New Jersey. F. Tilly. 1973. *New Jersey State Mus. Sci. Notes*, No. 13: 1-9 (mimeo).—Observations of 14 species of hawks and nine species of passeriformes appear in an appendix. Weather during the August to November period is discussed.—M. Ralph Browning.

9. Nocturnal bird migration in Skåne, Sweden, as recorded by radar in autumn, 1971. T. Alerstam. 1972. *Ornis Scandinavica*, **3**(2): 141-151.—This paper is the nocturnal equivalent to the Alerstam and Ulfstrand paper (see next review) on daytime migration, and as such constitutes the first radar study of nighttime migration in Sweden. The paper is based on 15 nights of radar films obtained from a high powered, 23-cm, MTI-equipped radar at Romeleåsen from 21 September to 10 October. Two types of echoes characterized the movements: (1) fast, distinct echoes probably produced by ducks, waders, or both and (2) slow, diffuse echoes probably produced by small passerines, mainly Robins (*Erithacus rubecula*).

Seventy-six per cent of the distinct echoes were recorded on four nights, and these birds moved predominantly W-WSW with following winds. Nearly one-half of the total diffuse echoes moved SSW in one night with following winds. On the remaining nights the diffuse echoes traveled SE, and Alerstam thought that these were probably displaced by W winds. Peaks of migratory activity were recorded early in the night, and, for diffuse echoes only, also after midnight. Morning trapping results at Falsterbo did not correlate with the amount of echoes on radar the previous night.—Sidney A. Gauthreaux, Jr.

10. Radar and field observations of diurnal bird migration in south Sweden, autumn 1971. T. Alerstam and S. Ulfstrand. 1972. *Ornis Scandinavica*, **3**(2): 99-139.—Two radar stations (one 10-cm and one 23-cm) and five field observers recorded daytime bird migration in southern Sweden from 21 September to 10 October 1971. Although the authors lumped a number of species under a few headings, their study was in fact concerned with four dominant diurnal fall migrants in Skåne, viz. Chaffinch (*Fringilla coelebs*), Wood Pigeon (*Columba palumbus*), Common Buzzard (*Buteo buteo*), and Common Eider (*Somateria mollissima*).

Most of the large radar echoes were produced by Wood Piegons, and a new pattern of Anseriform migration across Skåne from E to W was discovered. However, the most interesting results of this study refer to the migration of passerines. The radar display (PPI) almost every day revealed echo movement representing passerines (chiefly Chaffinches) flying at considerable altitudes and almost completely invisible to the field observers. The tracks of these high-flying migrants were strongly affected by wind directions. Crosswinds produced predictable changes of track directions assuming no compensation on the part of the birds, and these high-flying passerine migrants were apparently not influenced by coastlines and other major topographical features. The low-flying visible Chaffinch migration was quite different. These birds moved in a fixed direction suggesting lateral wind compensation. Particularly large numbers were recorded during head-wind conditions, and these low-flying birds were strongly influenced by coastlines and topography. Reverse movements occurred regularly with tail winds, but the vast majority of all echoes recorded during the study passed in a few days with following winds blowing in a "normal" migration direction.

This interesting paper like Gehring's (*Orn. Beob.*, **60:** 35-68, 1963; see review in *Bird-Banding*, **36:** 51, 1965) further supports the scattered reports that daytime passerine migrants are caused to drift by unfavorable wind with no compensation.—Sidney A. Gauthreaux, Jr.

11. Migration of birds over the south coast of China recorded by radar. M. T. Myres and R. F. Apps. 1973. *Nature*, **241:** 552.—This paper gives the preliminary results of a 10-cm weather radar study of bird migration over Hong Kong during April and May and from September to December 1972. Northeastward movements of birds prevailed in spring. The flights, partly overland and partly offshore along the coast, involved shorebirds almost certainly crossing the South China coast after an overseas flight from at least as far away as the Chinese island of Hainan (250 miles) and perhaps as far away as Vietnam.

From 24 to 28 April passerine-type echoes at altitudes up to 11,000 feet were recorded, arriving on at least four afternoons from over the South China Sea on tracks that ranged from NNW to NNE with a predominance of NNW-N. On three of the evenings in this same period, onward departures moved inland in the same northward direction, both from part of Hong Kong and also from some Chinese islands a little to the south. The observations of arrivals from the south and a closely related onward movement northward by an unidentified population of birds indicate a crossing of the South China Sea from the southern Philippine Islands or from the north coast of Borneo (between 700 and 1,200 miles), and a nonstop flight for 36 to 48 hours.

Corresponding south-westward movements were recorded in September and October, but no additional details are given in the paper.—Sidney A. Gauthreaux, Jr.

12. Nocturnal migrants killed at a central Florida TV tower; autumns 1969-1971. W. K. Taylor and B. H. Anderson. 1973. *Wilson Bull.*, **85**(1): 42-51.—"Annual bird kills occur at tall structures and airport ceilometers throughout the country." This includes 7,782 individuals (85% warblers) of 82 species recorded in Orange County, Florida, analyzed in some detail here. Losses suffered by fall bird migrants at other man-made objects and recorded as far back as the 1930s and 1940s, at the Washington Monument for example, showed a similar predominance of warblers. Insectivorous birds outnumber seed-eaters.—Leon Kelso.

13. Spring migration at Prince Edward Point, Ontario. R. D. Weir. 1972. *Can. Field-Nat.*, **86**(1): 3-16.—The study was conducted by censusing daily for 50 days between 9 April and 31 May 1971. The observer did no banding or netting and made no nocturnal observations. The paper is divided into two parts: (1) patterns of migration and (2) the relation of weather to spring migration. In the first part the author reports that large numbers of passerines are grounded in spring, and the number of birds is significantly higher in stormy weather and weather associated with frontal passage than in fair weather. The geographical features of the peninsula cause funneling of the grounded migrants, and many accumulate at the northeastern end. Birds that leave the peninsula by day generally do so by actually moving SW to the base of the peninsula and then inland,

but some do fly over the water from the northern shore particularly with S or SW winds. Hawks arrive from over Lake Ontario moving to the NW, but the peninsula serves as only a minor hawk route in late spring. In the second part of the paper Weir reports that bird migration into eastern Ontario is stimulated by the warm sector associated with approaching low pressure areas. Migrants were grounded in fog, rain, and cold fronts.—Sidney A. Gauthreaux, Jr.

POPULATION DYNAMICS

(**See also 4, 52, 55**)

14. Winter population trends in the Marsh, Cooper's and Sharp-shinned Hawks. W. H. Brown. 1973. *Amer. Birds*, **27**(1): 6-7.—Analysis of 20 years of Christmas Bird Counts shows a downward trend for Marsh (*Circus cyaneus*), Cooper's (*Accipiter cooperii*), and Sharp-shinned (*A. striatus*) hawks until the early 1960s. The author presents further data that show the three species increasing from about 1962 to 1971. Population trends are presented by comparing the period 1962-1966 with the period 1967-1971. The Cooper's Hawk has increased 53 per cent in Oregon where the number of party-miles has increased in the same period by about 55 per cent. Although the author compares birds per 100 party—miles, population trends presented are misleading. The author's analysis for states showing a decrease in population suggest that certain species are indeed on a downward trend. For example, the Marsh Hawk is shown to be down 49 per cent in Idaho. One wonders if this species is really becoming rare or if there is a scarcity of birders, or perhaps cars. M. Ralph Browning.

NESTING AND REPRODUCTION

(**See also 4, 17, 26, 36, 45, 52, 55**)

15. A fishing owl. (Rybnyi filin.) Y. Pukinskii. 1972. *Okhota i okhot. khozyaistvo*, **1972**(6): 40-41. (In Russian.)—Along Bikin River, Ussuri, six breeding pairs of Blakiston's Fish Owl (*Ketupa blakistoni*) were observed at sites in trees, 10 to 12 km apart. Along with young of the current year, juveniles of the preceding year were regularly visiting the nests and being fed. Parental feeding visits to the young were about 20 per night.—Leon Kelso.

16. Shoveller reproduction in the Gorki reservoir. (O razmnozhenii shirokonoski (*Anas clypeata* L.) na gorkovskoi vodokhranalishche.) A. Molodovskii. 1972. *Vestnik Z.*, **6**(3): 55-61. (In Russian.)—Shoveller nesting was studied at Unezhensk station in 1960 and 1961. The prenesting period was 11 to 14 days long; the nesting period, 48 to 68 days; and the egg-laying period, 45 to 49 days. Clutches of five to 13 eggs took 10 days to lay, on the average. Incubation required 22 to 23 days. Birds learned to fly between 23 and 42 days of age. During the preflight stage the mortality of young was 37 per cent. The average weight of 17 nonincubated eggs was 37.8 g, and the average weight of 106 young at hatching from 35 nests was 28.3 g. The maximum weight of four-month-old males was 600 g.—Leon Kelso.

ETHOLOGY AND PSYCHOLOGY

(**See also 4, 15, 45, 52, 54, 55**)

17. On the biology of the American Finfoot in southern Mexico. M. Alvarez del Toro. 1971. *Living Bird*, **10**: 79-88.—This reports a two-year study of territoriality, courtship, and reproduction in *Heliornis fulica* in Chiapas, Mexico. A startling discovery is that the male cares for and transports the newly-hatched young in a "pocket" formed by a fold of skin and feathers on the side under the wing (illustrated). Of remarkable historical note is that this was reported nearly 140 years earlier by Maximilian, Prince of Wied, whose contributions to American ornithology were considerable.—Leon Kelso.

18. Sleep in the Burrowing Owl (*Speotyto cunicularia hypugaea*). R. Berger and J. Walker. 1972. *Behav. Biol.*, **7**(2): 183-194.—"It is possible that the sleep and wakefulness pattern in the Burrowing Owl is altered in captivity, especially since the animals no longer had to actively hunt food and were fed by day. On the other hand the Burrowing Owl may not be as nocturnal in its habits as some other species of owls." The four owls studied used three distinct sleep and waking states: wakefulness with some activity; slow-wave sleep with some activity and reduced tonic neck tension; and desynchronized sleep, independent of eyelid movement. For a 24-hour period, sleep was 60 per cent, with desynchronized sleep taking 5 per cent of the total sleep time.—Leon Kelso.

19. Sleep in the Domestic Pigeon (*Columba livia*). J. Walker and R. Berger. 1972. *Behav. Biol.*, **7**(2): 195-203.—In a study similar to that of the Burrowing Owl (see previous review) total time asleep for the pigeon was found to be 41 per cent of the daily cycle, with desynchronized sleep taking 7.3 per cent of this amount.—Leon Kelso.

20. Dustbathing in Bobwhite Quail (*Colinus virginianus*). P. Borchelt, J. Eyer, and D. McHenry. 1973. *Behav. Biol.*, **8**(1): 109-114.— In four males and eight females, dustbathing was observed following one, three, and five days of dust deprivation. Dust "tossing" always precedes head rubbing, and head rubbing always precedes side rubbings. Longer deprivation resulted in increased frequency of dusting. Feathers deprived of dust for five days had a more oily appearance than those recently dusted. Several years of dust deprivation left plumage apparently "matted." Close chemical analyses would have been appropriate to verify the visual. It is suggested that dustbathing and oiling form a behavior system which regulates the amount of surface lipids on the feathers. Since oiling and preening did not stop upon dust deprivation, it is suggested that lipid accumulation on the feathers elicits dustbathing.—Leon Kelso.

21. Caste-specific compounds in male Carpenter Ants. J. M. Brand, R. M. Duffield, J. G. MacConnell, and M. S. Blum. 1973. *Science*, **179**(4071): 388-389.—Of interest to bird students because in the conspicuous *Camponotus* species, "simultaneous swarming from a large number of nests is dependent upon season, temperature, and time of day. However, it was also convincingly demonstrated that the mandibular gland secretion of the males is a critical factor in initiating the activity of the females before swarming. This secretion is used to scent the area immediately surrounding the nest entrance and to entice the females to swarm from the nest when the male flight is at a maximum." The point here is that several exudates other than formic acid might be involved in avian anting.—Leon Kelso.

ECOLOGY

(See also 4, 14, 45, 46, 52, 55)

22. Dominance relationships in nectar-feeding birds at St. Croix. C. Leck. 1973. *Auk*, **90**(2): 431-432.—Beyond the significance of the hierarchy among the three nectar-feeding species lies their "competitive aggression" dominance over the mutual sharing fruit-feeders at the same food plants. The same author found a similar relationship at *Cecropia* trees in Puerto Rico (*Wilson Bull.*, **84**(4): 498-500, 1972).—Leon Kelso.

23. Extinct, vanishing, and hypothetical parrots. A. Prestwich. 1970. *Avic. Mag.*, **76**(5): 190-204.—Since the year A.D. 1600, the date accepted for accounting by the Survival Service Commission, 167 bird species have become extinct, with 340 endangered. Of these the author determines 24 species of parrots as extinct or vanishing, with an additional hypothetical list of 12. If one admits these figures show a high proportion of parrots, then the proportion of less migratory, more sedentary, and vegetarian bird species prone to extinction also appears high.—Leon Kelso.

24. Some features of cavity-nesting birds' preferences in Transcarpathia. (Nekotorye osobennosti privlecheniya ptits-duplognezdikov v usloviyakx Zakarpatya.) M. Simochko. *Vestnik Z.*, **7**(1): 11-14. (In Russian.)—For attracting birds in oak woods of Carpathia (Ivanov forestry) to control outbreaks of Gypsy Moth (*Porthetria dispar*), Lackey Moth (*Malacosoma neustria*), and Brown-tailed Moth (*Nygmia phaeorrhoca*), 795 nest-boxes were suspended at three to eight m height. Of these, 738 were occupied by the European Tree Sparrow (*Passer montanus*) and 57 by the Common Starling (*Sturnus vulgaris*). Of the two box types used, the hollowed-out timber type was more attractive to the sparrows, the box type, to the Starlings. In other instances, the Starling found woodpecker hollows favorable, taking 51 out of 70. All the smaller or titmouse-sized boxes (484) were taken by sparrows. The sparrow dominance apparently restricted Starling occupancy and eliminated possible occupancy by flycatchers (*Muscicapa* spp.), tits (*Parus* spp.), and redstarts (*Phoenicurus* spp.). This sparrow prevalence was judged unfavorable in Gypsy Moth foci, whose larvae they do not consume.—Leon Kelso.

25. Ecological studies of birds and mammals on mat-grasslands. F. Turček. 1972. *Ekologia Polska*, **20**(34): 441-461. (In English with Czech summary.)—This contribution to the International Biological Program on grassland studies deals with the mat-grass (*Nardus stricta*) dominated area in Slovakia. A total of 28 bird and eight mammal species were recorded, as many or more than found in corresponding short-grass habitats in North America. The total vertebrate biomass was calculated as 1,500 g per hectare for mammals and 300 g/ha for birds, corresponding to a total weight of 580 g/ha. It is concluded that this is too incomplete to constitute an ecosystem. Mat-grass habitats are severely affected by grazing, fire, and impoverishment through export of materials and energy, hence tending toward degradation. Strangely, and contrary to most steppe-like habitats, the Shorelark (*Eremophila alpestris*) is absent.—Leon Kelso.

26. Breeding ecology of the Pied Flycatcher in southern Karelia. (Ekologiya razmnozheniya mukhollovki-pestrushki v yuzhn oi Karelii.) V. Zimin. 1972. *Ekologiya*, **6**(5): 65-72. (In Russian.)—In the Karelian taiga, chiefly at "Kivach" Reserve, *Muscicapa hypoleuca* was studied for eight years with regard to the correlation of preferred sites with nesting success. Local density varied from 0.2 to 15 pairs per km² (average, 4.7). A population peak in 1963-1967 found 21.2 prs./ km² in pine stands, 16.4 in spruce, 22 in birch, and 27 in aspen (average, 20), checked by transects and marked cavities. It was the most abundant species in the reserve after artificial nest boxes were added. Aspen and birch were preferred to coniferous trees in which occupied cavities were rare. Secondary forest was preferred three to five times over the original or primitive forests. Nest building took four to six days (extremes, 8 and 11). Egg deposition occurred before nest completion, and in the late season even on bare floors. In other instances there was a two-three day delay after nest completion. In the last 10 days of May and the first 10 of June, eggs were laid in 87 per cent of 689 nests with only minor variation from year to year because of weather. The season was much longer in deciduous than in coniferous forests. The average size of 539 clutches was 6.12 (3 to 9) with minor variations from year to year and slightly lower in conifers. Egg spoilage was 5 to 17 per cent but sometimes three to six eggs per clutch. Of 539 broods 91.5 per cent fledged. Nest loss was least in denser woods. Failure was less in artificial nests, thereby encouraging their introduction for insect control in conifer plantings.—Leon Kelso.

WILDLIFE MANAGEMENT AND ECONOMIC ORNITHOLOGY

(See also 1, 16, 23, 25, 26, 46, 52, 55)

27. Birdstrikes and the third London airport. E. Wright. 1972. *Animals* (England), **14**(4): 151-155.—Statistics show that collisions between birds and planes are three times more likely at coastal airports than inland. The third London airport was located where contrary to recommendations and had some unfortunate results caused by the proximity of 200,000 gulls and 5,000 assorted waterbirds plus the annual migration of 36,000 Black Brant each fall. The impact of an 1,800 g bird with a plane flying at 560 km/hr. is 16 tons.—Leon Kelso.

CONSERVATION AND ENVIRONMENTAL QUALITY

(See also 33)

28. Decrease in eggshell thickness of the White-tailed Eagle in Finland during 1884-1971. J. Koivusaari, I. Nuuja, R. Palokangas, and V. Vihko. 1972. *Ornis Fenn.*, **49**(1): 11-13.—Eggshells of *Haliaeetus albicilla* collected from 1884 to 1935 were significantly thicker ($\bar{x}$ = .614 ± .007 mm, n = 52) than were those collected from 1967 to 1971 ($\bar{x}$ = .525 ± .017 mm, n = 9).—Roger B. Clapp.

PARASITES AND DISEASES

(See also 55)

29. Features of granary and root mite nutrition on some proteins. (Osobennosti pitaniya ambranykh, *Glycyphagus domesticus, Tyrophagus putrescentiae*, i kornevogo, *Rhizoglyphus echinopus*, kleshchei nekotorymi proteinoidami.) I. Akimov, and L. Shchur. 1972. *Vestnik Z.*, **6**(6): 45-48. (In Russian with English summary.)—This involves the first, as known to this reviewer, artificial culture of mites on feather material. Beyond a general consideration of these common food stock pest mites, a detailed study found (1) that feathers and substances containing usual animal matter (collagen, ossein, and keratin) are not and cannot be digested by them, and (2) that mite feeding on such substrates as ligamenta, skin, horn, or feathers occurs not through consumption of the proteins, but by digestion of the accompanying lipid substances. Thus, mites on the feather surface ingest only the lipid films thereon, even if the feather were long since removed. They were experimentally cultivated to survive on powder-ground, if not defatted, pigeon feathers. They lived on pulverized talc, asbestos, and Sudan red if supplied with lipids. Also, as long since shown in acarology, feather mite mouthparts are often adapted only to scraping off the surface films of feathers.—Leon Kelso.

30. New host records of the chigger, Neoschoengastia americana, from Texas (Acarina: Trombiculidae). R. Everett, M. Price, and S. Kunz. 1972. *J. Med. Ent.*, **9**(1): 109-110.—The chigger is recorded for 17 local species of birds. The total of North American bird species as hosts is 45. The highest number on an individual bird, a Cardinal (*Richmondena cardinalis*), was 287. The average per infested bird was 22. The skin lesions caused by chiggers were most frequent on sides and breasts. This parasite has been found on only four mammal species.—Leon Kelson.

31. Key and list of the genus Boydaia. (Cle et liste du genre Boydaia Wom., Freynetidae: Trombidiformes.) A. Fain. 1971. *Acarologia*, **8**(1(: 98-112. (In French.)—The 37 species in this genus of mites live in the nasal cavities of birds, infesting primarily passerines.—Leon Kelso.

PHYSIOLOGY

(See also 18, 19, 49, 56)

32. The air-sac systems and buoyancy of the Anhinga and Double-crested Cormorant. C. Casler. 1973. *Auk*, **90**(2): 324-340.—Here are presented two well-described and illustrated pneumatic systems, that of *Anhinga anhinga* penetrating no bones, contrary to those of *Phalacrocorax auritus* and most other birds. A number of statements qualified by "may" and "might" leave in doubt conclusions as to reasons for the Anhinga's less water buoyancy. A point of consequence for further air-sac study, although bordering the extreme in difficulty, is to ascertain what gas is present in life in the sacs, whether air, CO_2, methane, or hydrogen. No one expects a cormorant, anhinga, or pelican to be frugivorous or vegetarian, yet here again we have the problem of general bioenergetic consequence of all-animal rather than vegetarian food source for buouancy in air as well as in water. "The differences in air-sac volume between the two species may be over-

shadowed by the effect of degree of distention of the digestion system." But is there any effective distention by gas or food?—Leon Kelso.

33. Polychlorinated biphenyl-induced decrease in liver vitamin A in Japanese Quail and Rats. H. Cecil, S. Harris, J. Bitman, and G. Fries. 1972. *Bull. Env. Contam. Toxicol.*, **9**(3): 179-185.—*Coturnix japonica* and *Rattus norvegicus*, 39 and 21 days old respectively, were fed diets containing 9,120 to 10,500 units of vitamin A per kg, the experimental groups of quail getting 100 ppm DDT and 100 ppm "Arochlor 1242" for two months. Livers of female quail were initially twice the size of those of males although body weights were unequal, 116 and 108 g, respectively. Under standard lighting conditions (14 hours light, 10 dark) daily egg records showed no effects the first month but a 25 per cent decline in egg production in the second month. Arochlor-fed birds produced 325 eggs of normal weight and shell thickness but six shells were broken and four were membranous. In another experiment, females were kept in continuous darkness, suppressing egg laying, and fed PCB. Liver vitamin A was reduced 50 per cent.—Leon Kelso.

34. Daily and seasonal cycles of blood sugar in sedentary and migratory birds. (Sutochnye i sezonnye tsikly sakharozy krovi u osednykh i pereletnykh ptits.) T. Dolnik. 1973. *Z. zhurn.*, **52**(1): 94-103. (In Russian with English summary.)—This paper presents an extensive analysis comparing the physiology of the migratory Chaffinch (*Fringilla coelebs*) and Spanish Sparrow (*Passer hispaniolensis*) with the sedentary House Sparrow (*Passer domesticus*) in the fall migratory period. Daily changes in blood sugar, weights of the digestive tract, and feeding and locomotor activities were studied at different stages of the annual cycle: molt, premigratory, migratory, postmigratory, and winter periods. Fat *F. coelebs*, inactive and without food during darkness, were tested for blood sugar content. This showed a circadian rhythm with peaks in the morning and evening; the peaks were not correlated with feeding or activity. During premigratory fat deposition and renewal of consumed fat reserve during migration, there were shifts of the blood sugar rhythm, the morning peak shifting backward into the preceding night and the evening peak into midday. As a result of these shifts, the position of the sugar peaks relative to heights of feeding and locomotor activity was changed. The low sugar level in the early half of the day appeared to stimulate morning feeding and relax migratory restlessness. The rhythm of sugar content is bimodal in both sedentary and migratory birds. It is stated, however, that rhythms of activity, food consumption, and such seasonal differences that do occur in migratory and sedentary birds are not controlled by fluctuations of blood sugar content. Yet daily blood sugar cycles may be involved in the control of some diurnal rhythms of feeding and movement during transition from one physiological state to another.—Leon Kelso.

35. Alteration of body fat by migratory fat deposition in *Fringilla coelebs*. (Izmenenie sostava zhirova tela pri migratsionnoi otlozhenii zhira u *Fringilla coelebs*.) V. Dolnik. 1972. *Doklady Akad. nauk. SSSR*, **206**(1): 247-249. (In Russian.)—Analysis of fat, water, and nonfat dry content of subcutaneous body tissue in 132 Chaffinches at different stages of fat deposition found that in the premigratory state early fat deposition is accompanied by additional cell formation and increase of nonfat substance and water. During migration subsequent loss and renewal of fat proceeds by corresponding alteration of current cell content only. Nonfat components fluctuate very little. These conclusions are contrary to previous beliefs. Significant in water economy of migrants is the development that endogenous water manufacture occurs during fat metabolism (B. Vartapetyan, "Molecular Oxygen and Water in Cell Metabolism," 1970, see review **56**).—Leon Kelso.

36. Nest temperatures of some bird species in arid lands. (Temperaturnye usloviya v gnezdakh nekotorykh vidov ptits aridnykh territorii.) T. Ponomareva. 1972. *Z. zhurn.*, **51**(12): 1846-1856. (In Russian with English summary.)—Taking temperature as the decisive factor in development of desert bird nestlings, those of 16 species in the Karakum desert (Repetek area) were studied from 1969 through 1971, in 31 empty experimental nests and 50 natural nests. Continuous recording thermometers were applied to pertinent surfaces. Data converted to second order equations showed a correlation of nest temperature to air

temperature. On graphs these data reduced to parabolas corresponding to the coefficient of cooling. The resulting two types of parabolic curves, concave and convex, reflected the birds' reaction at lower and upper temperature levels. Significant differences were found in nest temperatures during the sitter's absence when wind and insulation amplified temperature variations considerably. Brooding and shading by parents greatly reduced discomfort of young as did favorable location of the nest.—Leon Kelso.

37. How birds reduce heat loss. (Kak ptitsy snizhayut teplootdachu.) V. Gavrilov. 1972. *Priroda*, **1972**(10): 110. (In Russian.)—In plexiglass chambers at 0°C Goldcrests (*Regulus regulus*) huddled close together; one alone expended 0.348 kcal/hr; two together, 0.539; and three together, 0.675. The corresponding data for Long-tailed Tit (*Aegithalos caudatus*) were 0.409, 0.597, and 0.748 kcal/hr. Thus, in the Goldcrest, group economy for two was 23 per cent per individual; in the Long-tailed Tit, 30 per cent. For groups of three heat loss reduction was 37 per cent and 40 per cent, respectively, per individual. In the Chaffinch (*Fringilla coelebs*) rotund expansion of plumage effected reduction from 0.712 to 0.523 kcal/hr; for *Regulus*, 0.401 to 0.346; for *Aegithalos*, 0.444 to 0.409.—Leon Kelso.

MORPHOLOGY AND ANATOMY

(See also 32, 55)

38. Measurements of Puffins as criteria of sex and age. P. Corkhill. 1972. *Bird Study*, **19**(4): 193-201.—Using cloacal examination as a method of determining sex, Corkhill examined wing lengths, bill measurements, and body weights of *Fratercula arctica* on Skomer Island, southwest Wales. Males had significantly longer wings and greater body weights than females but the best method for determining sex in adult birds proved to be a bill index in which greatest depth, not including the cere, was multiplied by length measured along the gape from the edge of the cere to the tip. Males had indices greater than 1,045 mm^2 and females, less than 1,011 mm^2, with 90 per cent accuracy. The figures for 95 per cent accuracy were respectively 1,070 and 992. This method allowed sexing of about two-thirds of all birds with a high degree of confidence.

Corkhill cautions the reader that such a method of discrimination would have to be recalculated for many other populations because of the variation in bill size from area to area. He also suggests that the number and distinctness of bill furrows, thought by some to distinguish three age groups, might not be entirely reliable and that more data are clearly needed.—Roger B. Clapp.

39. Ultrastructure of the avian retina. An anatomical study of the retina of the Domestic Pigeon (*Columba livia*) with particular reference to the distribution of mitochondria. J. Hughes, D. Jerrome, and H. Krebs. 1972. *Exp. Eye Res.*, **14**(3): 189-195.—More extremes in the development of specialized bird organs are brought out in this combined histochemical and EM study, which includes examination of stained tissues at 20,000 X or more magnification. Unlike mammals and other vertebrates, "Avian retinal metabolism is several times higher than that of any other tissue subjected to measurement, and this metabolism is dependent on the fermentation of glucose to lactic acid. With these biochemical findings in mind, several ultrastructural peculiarities of the avian retina invite comment. The retina of the pigeon appears totally devoid of blood vessels. Internal to Bruch's membrane no capillary endothelial cells or red blood cells were observed." Also, most of the retina is uniquely free of mitochondria. The authors presume that all this affords extreme transparency with reduced light absorption and scattering, all of which is advantageous for eyesight. —Leon Kelso.

40. Filoplumes of petrels and shearwaters. M. Imber. 1972. *N. Zeal. J. Marine and Freshwater Res.*, **5**(3-4): 396-403.—On *Pterodroma macroptera*, the species examined in detail for this study, filoplumes are characterized by thin shafts with fan-like vanes at the curved tips. Found mostly on the head and neck, they are more numerous around the eyes, on sides of crown, and center of occiput than elsewhere. It is suggested that they are secondary sexual characters. Their

distribution on 45 species of shearwaters is summarized, in general, more developed on dark-crowned forms, and sparse or absent on light-crowned forms.—Leon Kelso.

41. Observations on sound production in the Anatidae. P. A. Johnsgard. 1971. *Wildfowl*, **22**: 46-59.—Structural variations in the trachea and syrinx have long been known in the Anatidae and include such features as elongation and looping of the trachea, irregular enlargements of the tracheal tube, and sexually dimorphic enlargement of the syringeal bulla. These variations are often of taxonomic significance, but Johnsgard is apparently the first to attempt to correlate such differences with variations in the sounds produced by the birds. He presents a series of sonagrams of calls of most major anatid groups, and discusses these in relation to structural specializations of the trachea. Two questions have been debated in the literature; does the trachea contribute to the quality of the sound produced, and if so, how? Johnsgard concludes that in the Anatidae the trachea modifies the sound produced in the syrinx by acting as a resonator of the open tube (e.g., trumpet) rather than a closed tube (e.g., organ pipe) type. This is shown by the pattern of harmonics revealed on the sonagrams. Specific structural characteristics in each tribe are correlated with the sounds produced. The evolution of tracheal bullae in the males of many species is correlated with the development of species-specific characteristics of their calls. However there are some specializations of structure or sound in various species for which clear structural/functional correlations cannot yet be made.—Robert J. Raikow.

42. The anatomy of the syrinx in passerine birds. R. W. Warner. 1972. *J. Zool.*, **168**: 381-393.—The title of this paper is misleading. The study largely concerns the histological structure of and (probable) method of sound production in the oscine syrinx. The author concludes "that the fundamental sound-producing structures in the songbird syrinx are the two internal tympaniform membranes, and that there are no other membranous, sound-producing structures in the syrinx. The internal tympaniform membranes, located one in each bronchus, may vibrate together or independently of each other. Thus it is possible for two simultaneous, harmonically-unrelated tones to be produced." A histological approach to syringology has long been needed, but the present paper has several faults. It is limited by its sparse representation of the passerines; nine genera in six *oscine* families were examined, not including some of the forms known to be syringeally most interesting, such as larks and suboscines. In the long historical review of previous studies, Ames's important recent monograph is not mentioned, yet Warner states that "since 1950 . . . little original research has been published," a statement that clearly is not true even from his discussions of the post-1950 literature. The Ames thesis (1965) is briefly commented upon, mostly in relation to syringeal terminology, but the monograph (1971) is only mentioned once, in a discussion of the pessulus. In his anatomical description Warner states "the pessular rod is never absent in passerine birds." Yet in the later Discussion he says "Ames (1971) remarks that the pessulus is absent in larks (Alaudidae). The pessulus provides a rigid tracheal margin to the sound-producing membranes, and provides a base against which tension may be applied to the internal tympaniform membranes . . . ." Warner either missed or ignored the fact that the pessulus is absent in a great many suboscines, as shown by Ames and earlier workers. Nor did the present author examine a lark himself; one might expect that he would have, to check Ames's statement—particularly in this case of a group of birds renowned for their song and where they reportedly lack a main supporting structure for the postulated sole mechanism for sound production. This paper seems to have important omissions, is too condensed, and lacks sufficient discussion and proof of strong conclusions.—Mary H. Clench.

PLUMAGES AND MOLTS

(See also 2, 20, 29, 40, 55)

43. Ageing of Ovenbirds by rusty-tipped tertials and skull ossification. W. K. Taylor. 1973. *EBBA News*, **36**(1): 71-72.—Taylor reports results of the examination of 1,888 autumn migrant and 89 spring migrant *Seiurus aurocapillus* that were collected in Florida. All 53 autumn birds with rusty-tipped

tertials had unossified skulls and were presumably hatching-year birds. However, nine (6.7 %) of the 135 birds lacking rusty tips on the tertials also had unossified skulls. Eleven (12.4 %) of the spring migrants had rusty-tipped tertials and ossified skulls suggesting that a small proportion of spring migrants can be assessed as second-year birds on the basis of plumage characteristics. If Table 1 (which evidently contained detailed results for the autumn birds) had not been inadvertently omitted, the note would have been more useful.—Roger B. Clapp.

44. An age-determining technique for female Evening Grosbeaks. R. P. Yunick. 1973. *EBBA News*, **36**(1): 69-70.—Two *Hesperiphona vespertina*, evidently captured in November, one with an ossified skull and another without, serve as the basis for Yunick's suggestions that certain characteristics of wing coloration and marking might serve to distinguish hatching-year females from older females. Yunick felt that the most useful characteristic was the amount of white edging on the inner vane of the primary coverts. The after-hatching-year bird had completely black coverts whereas those of the hatching-year bird were strikingly white-edged. Neither of two females with incompletely ossified skulls in January that I examined in the USNM collections had anything but entirely brownish-black primary coverts indicating that this characteristic is unreliable. Althouth it is helpful to call attention to potentially useful aging criteria, publication of these data was certainly premature.—Roger B. Clapp.

ZOOGEOGRAPHY AND DISTRIBUTION

(See also 5, 6, 48, 51, 52, 55, 57)

45. Biogeographical sketch of the Reed Bunting. (Esquisse biogeographique du Bruant des Roseaux *Emberiza schoeniclus* (L.) C. Ghiot. 1972. *Alauda*, **40**(4): 367-377. (In French with English summary.)—The author presents a list of the races retained by Vaurie in "The Birds of the Palearctic Fauna." with short statements of their ranges and a distribution map. There follows a brief review of the literature concerning the species' breeding ecology, the tendency exhibited in recent years to colonize drier habitats, and migration. The paper is evidently intended as a summary of recent investigations for the benefit of French-speaking workers.—John Farrand, Jr.

46. Drought displaced movement of North American Pintails into Siberia. C. J. Henny. 1973. *J. Wildl. Mgmt.*, **37**(1): 23-29.—From 1954 through 1970, 230 *Anas acuta* banded in North America were recovered in the U. S. S. R. (220), Japan (9), and Korea (1) but the great majority were reported from the northeastern U. S. S. R. This number represented 0.2 per cent of all Pintail recoveries obtained during this period.

Henny analyzes these recoveries and suggests that some Asiatic breeding birds regularly winter in western North America. For birds banded in the interior of North America, Henny found a significant correlation between the annual rate of recovery in Asia and the percentage of the Pintail population nesting in the northern part of the North American breeding range. The percentage of birds nesting in the north had already been shown to be inversely correlated with the amount of surface water present in the southern part of the breeding range. These correlations led Henny to suggest that the numbers of interior birds moving to Asia resulted from drought in southern breeding areas. No such significant correlation was found for birds banded on the Pacific coast.—Roger B. Clapp.

47. Recoveries of Royal Terns banded in Virginia. Part I. The Caribbean. W. T. Van Velzen and R. D. Benedict. 1972. *Raven*, **43**(3): 39-41.—The authors list and map recoveries of 33 *Thalasseus maximus* recaptured in the Bahamas (2), Cuba (3), Dominican Republic (11), French West Indies (3), Haiti (1), Jamaica (8), Puerto Rico (2), Trinidad (1) and at sea (2). All birds were presumably banded as young (although this is nowhere so stated in the paper) in colonies in Northampton County.

Most of the report consists of a table listing band numbers, recovery localities, dates of banding and recovery, and how the recovery was obtained. For the last, a series of numerical codes were used that were evidently intended to be the same

as those used by the Bird Banding Laboratory. Ten of the "how obtained" codes are explained verbally but three of these were not used for any of the recoveries listed. In addition, six of the recoveries were listed with the unexplained code "60" (at present not a code in use by the Bird Banding Laboratory). The verbal explanations for all but three of the codes used by the authors bear no correspondence to present use of such codes by the banding office.

This paper, and Van Velzen's previous papers on dispersal of this tern (*Raven,* **39**(4): 55-60, 1968; *Chat,* **35**(3): 64-66, 1969) might have profited greatly from a more analytic approach to the data.—Roger B. Clapp.

SYSTEMATICS AND PALEONTOLOGY

(See also 55)

48. Classification of the Dunlin. (Definition du Becasseau Variable *Calidris alpina* (L.) J. Vielliard. 1972. *Alauda,* **40**(4): 321-342. (In French with English summary.)—The author reviews the systematic position of *Calidris alpina* and presents a list of the subspecies that closely follows Vaurie in "The Birds of the Palearctic Fauna." The intermediate Asian population *centralis,* which Vaurie placed in synonymy with nominate *alpina,* is considered a recognizable subspecies. The position of the subspecies *sakhalina* and the northern Alaska population receives little attention. The Dunlin is compared with other waders that are potential competitors. Distribution is reviewed and details are given on transcontinental dispersal. A paper on an ecological analysis is planned and will hopefully list the papers cited in this present treatment.—M. Ralph Browning.

EVOLUTION AND GENETICS

(See also 41, 56)

49. Evolution of the genus *Tetraogallus* Gray, 1834. D. Baziev. 1972. *Acta Ornithol.,* **13**(5): 173-190. (In English with Polish and Russian summaries.)—This high montane and alpine group variously named Snowcocks, Snowhens, or the more native name, Ulars, comprises five species; *Tetraogallus altaicus, T. himalayensis, T. tibetanus, T. caspicus,* and *T. caucasicus.* Among several prominently distinctive features are the very dense plumage and markedly reduced apteria that are occupied with a peculiar apterial down. Many other details are delineated here with much discussion of evolutionary trends. The author sees a definite correlation to Bergmann's law in their increase in size with greater altitude and climatic severity. For one major question, why the restriction of these species to their highest habitable altitudes in Asia, the author suggests that it is their attachment to open arid ground and subsequent history of mountain mass elevation. Another problem, their interspecific color variation, is largely confined to the underparts, and shows strong correlation to climatic humidity, or rather lack of it, in the regions inhabited by them.

The higher that species of *Tetraogallus, Leucosticte,* and various fringillids dwell, the more earthbound and granivorous or herbivorous they become. Yet those bird species which migrate over Tibet and brave the jet-stream winds of Himalayan passes are insectivorous, or carnivorous, as exemplified by the several shorebirds and raptors following these routes.—Leon Kelso.

FOOD AND FEEDING

(See also 22, 55)

50. On the food of the White-rumped Swift in South Primor. (K pitaniyu belopoyasnogo strizha v Yuzhnom Primore.) N. Litvinenko. 1972. *Ornitologiya,* **10**: 361:362. (In Russian.)—Forty pellets of *Apus pacificus* (name per Russian classification) from June and July contained only insects of 27 families, mostly in the orders Coleoptera, Hymenoptera, and Diptera. During feeding flights these swifts ranged 40 km inland from the coastal cliffs where they nested, another instance of flight buoyancy and persistence in an insectivorous bird.—Leon Kelso.

BOOKS AND MONOGRAPHS

51. ***Khumbu Himal.*** (Nepal Himalaya; Results of the Nepal Himalaya Research Program, Vol. 2, Contribution to the Ecology of Central- and East Nepal Birds.) G. Diesselhorst (W. Hellmich, ed.). 1968. Universitatsverlag Wagner, Innsbruck-Munich, Germany. 40 figs., one map, 417 p. $20.00 U. S. (In German with English summary.)—Amply funded and richly produced by the Fritz Thyssen Foundation, this is an eye-filling pictorial and descriptive account of bird life at the "top of the world." The ornithological party of the project obtained 1,700 skins and data covering nine months in Nepal. Some results follow.The climate is basically Indian monsoon. Up to 4,000 m altitude the vegetation is much altered by human forest clearing with corresponding changes in bird life. The Forest Fauna is 90 per cent of Oriental origin; the Non-forest Fauna, excluding water birds, is mainly Palearctic alpine and Oriental lowland; and the Alpine Fauna is nearly all Palearctic alpine. The Shorelark (*Eremophila alpestris*) breeds up to 16,000 ft. The breeding seasons correspond more to those of the palearctic than to the Indian oriental species. Molt usually occurs before migration. Palearctic species migrate long distances whereas other species, mostly Himalayan and Tibetan, migrate only vertically. Information, however, is fragmentary. Of outstanding importance, "It is a completely unsolved problem how migrating birds succeed in overcoming the jet-stream zone of very high wind speed located above the main Himalayan range nearly the whole year through."—Leon Kelso.

52. ***Buffleheads.*** A. J. Erskine. 1972. *Can. Wildl. Serv. Monogr. Ser., No.* 4. 240 p. $7.50.—With this publication the Canadian Wildlife Service continues the impressive tradition begun with the publication of L. M. Tuck's monograph on the murres. Erskine's report, which is basically an extension of his 1960 M.S. thesis research at the University of British Columbia, is printed in hardback book format with high quality paper and a relatively great profusion of figures in the form of photographs, maps, and diagrams. The field work associated with this research was performed between 1958 and 1966, and the manuscript was largely completed by 1967. The five-year delay between this completion and the appearance of the published version gives some insight into the travails of publishing research reports through governmental agencies, and it is more realistic to be grateful that the report has finally appeared than to haggle over the resultant gap in literature coverage that might have thus resulted. Actually, some citations as recent as 1970 are included in the references, and inasmuch as the Bufflehead has been almost singularly ignored by most waterfowl biologists there has been no serious loss of topicality by these delays.

The features that impelled Erskine to study the biology of this small and economically insignificant species of waterfowl were apparently its fascinating behavior patterns and its remarkably small size and associated ecological uniqueness in being dependent on tree cavities made by woodpeckers for its nesting sites. While admitting that "there are many easier birds to study than Buffleheads," Erskine nevertheless managed to examine more than 170 nest sites, banded the females on most of these nests, and established large sample sizes for such basic breeding biology data as egg-laying intervals, clutch-sizes, incubation periods, egg and nest success rates, and brood survival. Substantial amounts of information on wintering and breeding ranges, spring and fall migration patterns, social behavior, and food intake analyses are also summarized.

Erskine has provided initial basic information in a number of areas of Bufflehead biology. He has proved, for example, that the incubation period is substantially longer (28 to 33 days) than had previously been reported. More interestingly, the vast majority of females (44 of 51) caught in successive years were occupying the same nest site, and two females reached ages of nine years (data from trapped nesting birds). Based on band recoveries of dead birds, the estimated annual survival rate was calculated as 27.8 per cent for immatures and 46.6 per cent for adults, whereas data from recaptures of females at nests indicated an annual survival rate of 50 per cent. Although aspen provides the largest number of potential nest sites for Buffleheads in most of their breeding range, Erskine found that the high rate of breakage and the rate of decay makes such nest cavities much less permanent than those in Douglas fir or in pine trees. He was unable to verify early literature reports that Buffleheads occasionally nest in ground burrows when trees are unavailable. His studies of breeding ground records indicate that no evidence exists to suggest any important range extensions in the last 100 years,

although a range retraction has evidently occurred along the southern breeding margin in the prairie, boreal forest ecotone.

In a thoughtful terminal chapter, Erskine comments on the probable roles of competing species, agriculture, forestry, and fire in the present and future welfare of the Bufflehead, and concludes that at present the species is not seriously threatened by these forces. Although a target for hunters, the species is clearly a "second-rate" bird in terms of sporting value and meat poundage; at least in the western states Buffleheads are apparently being harvested at or beyond their replacement limits. But as an object of aesthetic beauty the Bufflehead is unsurpassed, and Erskine makes the suggestion, perhaps surprising for an employee of a federal game management agency, that the Bufflehead might be of more value in this regard than as a game bird.

It is difficult to find fault with such a well organized and valuable piece of work on a species that has until now been so little studied. I would only suggest that the presence of either an index or a chapter-by-chapter summary would greatly aid the reader in locating the large amount of information found between the book's covers.—Paul A. Johnsgard.

53. ***Words for birds/A lexicon of North American birds with biographical notes.*** Edward S. Gruson. 1972. Quadrangle Books, Inc., New York. 305 p., 238 black-and-white illustrations from Alexander Wilson. $8.95.—I first saw this book in manuscript about five years ago when it was going the rounds of the publishers and was sent to my husband to referee. My husband's comments included the statement that the author had an interesting project and a catchy title, but in its present state the manuscript needed careful editing by an ornithologically and linguistically knowledgeable editor and a great deal of rewriting. In its published form it still needs the same treatment.

"Words for Birds" shows its author's unfamiliarity with a vast ornithological literature and ornithologists past and present. It has many glaring errors, such as the incorrect translation of Japanese bird names "akahige" and "komadori." It has misleading biographies, either through ignorance or lack of judgment and, last but not least, geography has been woefully abused. By no possible stretch of the imagination can the Hawaiian Islands be considered part of the continent of North America. Creating them a political adjunct of the United States did not move them within this continent's limitations.

The short bibliography reflects Edward Gruson's errors of commission and omission. He has very often ignored source material and put his trust in other people's research.—Elizabeth S. Austin.

54. ***Man & birds: evolution and behavior.*** Andrew J. Meyerriecks. 1972. Pegasus (div. of Bobbs-Merrill), Indianapolis and N. Y. 209 p. $6.95.—This book was produced under the auspices of the Biological Sciences Curriculum Study (BSCS), which has produced some well-known textbooks in life sciences at the high school level. As the subtitle suggests, the book has two parts: one on evolution (five chapters) and another on behavior (three chapters). The book essentially teaches some basic biology through the examples of birds, and while written for young persons might be read with interest by adults who have had no recent biological training at the college level.

The first chapter introduces natural selection, and Meyerriecks carefully avoids usual mistakes found in textbooks. For example, he correctly attributes the phrase "survival of the fittest" to Herbert Spencer (not Darwin), and presents the topic of "food-finding" calls of gulls with the common sense so needed in most discussions; yet he does such things with ease, not pedantry.In the remainder of part I, the author deals with the standard topics of evolutionary study: speciation, variation of various kinds, the problems of islands, barriers to hybridization, adaptive radiation, and major emphases of continental avifaunas. The classical examples are cited along with Meyerriecks's own lucid work on herons.

The behavioral half of the book begins with territoriality, in which the author shows the variants of the notion of "any defended area." The material is of the standard sort and does not deal with recent attempts to link territoriality to loci of isoaggressiveness radiating from a particular spot, nor with interrelationships between dominance hierarchies and other forms of varieties of aggressive-based social organization. Yet, what is said is clear and simple. In the chapter on communication, the usual material on visual displays and bird songs is presented. Too much emphasis, I think, is placed upon the theory that the specific distinctiveness

of avian song is due to the need for preventing females from confusing males of their species with males of others. Omitted from this discussion is the fact that the acoustic habitat in which birds sing might have a strong influence on the physical structure of their sounds. The last chapter is on brood parasitism, which seems a bit specialized and out of place when so much about behavior has been omitted entirely.

My quibbles are minor. This is a clearly written book with simple but important illustrations. I hope my 10-year-old son will enjoy it as much as I did.—Jack P. Hailman.

55. ***The snipes: a study of the Genus*** **Capella.** L. M. Tuck. 1972. *Can. Wildl. Serv. Monogr. Ser., No.* 5. 429 p. $7.25.—It is a truism in biology that those species which support commercial exploitation are those about which the most is known. A glorious exception was Wilson's Snipe. It and the Woodcock are the only two species of shorebirds that may still be hunted in North America. But unlike the Woodcock, which has been extensively studied, the secretive snipe has remained a creature of mystery.

That situation no longer exists. In this impressive monograph, L. M. Tuck presents the results of his important field studies of snipe, mostly in Canada, but also in Europe and in South America. As an added attraction, he ties together the scattered and fragmentary literature on other snipes of the world. The result is an important compilation that is enhanced by attractive photographs, tables, and maps.

The scope of the book is best illustrated by its chapter headings: goat of the bogs; morphology; taxonomy and geographical distribution; breeding habitat and territories; spring migration; pair-formation and mating behaviour; the nest, eggs, and incubation; the care and growth of the chick; feeding habits and food; fall migration; winter habitat; parasites and natural mortality; plumages, moults, and weights; population structure and hunting; management. Want more? The appendices include data on type localities and taxonomic synonyms, banding recoveries, and a detailed section on censusing and trapping snipe and collecting their parasites. There are even data on raising chicks in captivity.

Most topics are treated with great success. Tuck has introduced new evidence on many important subjects including the migration route between Newfoundland and South America, and the roles of the sexes in courtship and reproductive activities. His conclusion that snipe populations can withstand much more hunting pressure than they currently receive will probably be met with mixed feelings by conservationists.

As in any work covering a broad spectrum, some unevenness is inevitable. In many places, for example, the discussion of nest sites, the text is reminiscent of a Bent "Life History," replete with superfluous quotes dealing with fragmentary observations. One would prefer less detail and more summation. On the other hand, I was fascinated by the detailed accounts of snipe hunters in the last century, particularly the exploits of J. J. Pringle, who averaged 158 birds per day in Louisiana in 1874-75.

Some material of marginal relevance is included. I see no compelling reason to illustrate a snipe skeleton, the myology of the hind limb, or details of parasite life cycles in a book of this nature. In a few places, the discussion is confusing (e.g., brood patch, p. 324). But these are minor quibbles. This is an uncommonly good book that will be of reference value to ornithologists, hunters, and wildlife managers. The author and the Canadian Wildlife Service are to be congratulated for providing us with a fine work at an absolute bargain price.—J. R. Jehl, Jr.

56. ***Molecular oxygen and water in cell metabolism.*** (Molekulnyarnyi kislorod i voda v metabolizme kletki.) B. B. Vartapetyan. 1970. "Nauka" press, Moscow. 253 p. (In Russian.)—This book presents in detail work on endogenous rhythms in physiology and the manufacture of endogenous water in animals and plants in waterless areas. With use of radioactive oxygen(O^{18}) the author apparently has proved that endogenous water manufacture does occur, and he has also spelled out the details of the process. In brief, water from any initial source is repeatedly recycled photochemically, day and night. With supplies of aerial oxygen and carbohydrate substrate to supply hydrogen, the organism manufactures endogenous water, which constitutes most of the water stock of desert plants. The phenomenon is complex, as explained in the five chapters:

Isotopes of heavy oxygen in biological experiments; Role of molecular oxygen and water in biological oxidation; The oxygen cycle and the ultrastructure of plant cells; Water as a product of oxygen metabolism in the organism; and Radioactive water in research on the water metabolism of plants. But more than that, endogenous water creation was found in quantity in animals, particularly in the silkworm moth (*Bombyx mori*). Supplied with illustrations, tables, and a 24-page bibliography, the book summarizes over 10 years of work by the author and many others. For some reason the book is late in arrival here. There has also been cautiously slow acceptance of its research results.—Leon Kelso.

57. *Birds of Pennsylvania.* M. Wood. 1973. Pennsylvania State University, University Park. 103p. $2.00.—Many readers who remember Merrill Wood's earlier guide for bird-banders will be equally pleased with this new paperback. It is an up-to-date summary of all the birds recorded in Pennsylvania, with 186 ink drawings of the more common species. An introductory section (without pagination) provides concise comments on the state's topography, climate, and seasonality of birdlife. A state map showing counties and major bodies of water would have been a helpful addition.

Species' accounts of distribution and abundance are arranged in taxonomic order, with introductory paragraphs for each family. Such family accounts help the reader maintain a more cosmopolitan outlook, which is reinforced with abbreviated descriptions of each species' entire range (e.g., "also in the Eastern Hemisphere"). The accounts themselves are generally very well done, with sufficient detail to make the book a useful reference for the field observer. Poole's "Pennsylvania Birds" (1964) was certainly a stepping stone, but Wood has made his own important contributions. For most birds the status is reviewed on a seasonal basis. Below are a few general criticisms that could improve the next edition.

Almost no information is presented on *changes* in status in modern times (e.g., decline of the Eastern Bluebird). Omissions of recent records are sometimes important (e.g., the record of Arctic Terns at Lake Wallenpaupack reported in *Cassinia*, 1971). Naturally some status descriptions will be challenged by field workers—among others I would question the appelations of "common migrant" for the Yellow-breasted Chat and "accidental" for the Long-billed Dowitcher. Since the two subspecies of Willets are mentioned, why is there no mention of the more easily identified subspecies of the Palm Warbler? And a few sentences would be welcome on the hybrid warblers (other than "occasionally occur", p. 81). Finally, the reader may be surprised by some new common names (e.g., Northern Oriole, Gray Catbird, and Dark-eyed Junco). These are not the accepted names found in the fifth edition (1957) of the A. O. U. Check-list.

The pen sketches by Dorothy Bordner are a most pleasant addition to the page borders. They reflect much talent (some of the best are the Black Duck, Blue Jay, and Pine Grosbeak). A few species are disproportioned (e.g., the short-winged Nighthawk and Chimney Swift, and the short-tailed Brown Thrasher). Intended as identification aids, all the drawings will simply be most appreciated as an enjoyment in themselves.

The "references" section is an unfortunate conglomeration. More useful would be a list of all the local bird publications for Pennsylvania (e.g., "Birds of the Lewisburg Region," "Birds of Longwood Gardens"). A list of field-guides, texts, and some regional journals is placed in the book's introduction.

In retrospect I find few objections, and the slim volume is an attractive bargain with a moderate price and modern text. It should be well received by residents in the northeast. The heavy-paper cover seems adequate and the printed pages are of high quality.—Charles Leck.