RECENT LITERATURE

Edited by Bertram G. Murray, Jr.

BANDING AND LONGEVITY

(See also 14)

1. **Bird Ringing.** Chris Mead. 1974. BTO Guide 16. 68 p. $2.00 (sent surface mail).—This new pamphlet is intended to educate the bird watcher in what bird ringing (or banding) is all about. As such, it is an excellent introduction. There are brief descriptions of record keeping, the kinds of rings, trapping techniques, and the kinds of problems that banders study—e.g., molt, weight variations, causes of mortality, population dynamics, and migration and movements. These sections are not written for the birdbander but for the bird watcher. Nevertheless, the last section on movements, which is the longest, should be of interest even to experienced banders. Over 30 maps, many especially prepared for this guide, illustrate what can be learned. There are examples of differences in movements between species and within species with respect to age, sex, and local population. Some intriguing information is presented.—Bertram G. Murray, Jr.

2. **Bird-banding at Powdermill, 1973.** R. C. Leberman and M. H. Clench. 1974. Powdermill Nature Reserve Research Rept. No. 33. 14 p.—This year's report is brief, giving the 1973 banding totals for each species, the returns and recoveries (including several interesting records), and new age records for birds banded at the reserve.—Bertram G. Murray, Jr.

3. **Longevity Records IV.** W. Rydzewski. 1973. *Ring,* **8**(77): 91-96.—This is the fourth list in a series of greatest longevities obtained by birds in the wild and deals with birds banded by North Americans. The list is only preliminary, however, and is stated by Rydzewski to be incomplete and not up to date. Still, it should be of interest to North American banders who want a quick idea of the order of magnitude of the maximum longevities so far obtained for a large number of species. The oldest bird listed is a Herring Gull (*Larus argentatus*) that was slightly over 31 years old. Most of the other great longevities listed are for seabirds. Six species are listed with longevities between 20 and 30 years: Blue-faced Booby (*Sula dactylatra*), Osprey (*Pandion haliaetus*), Glaucous-winged Gull (*Larus glaucescens*), Caspian Tern (*Hydroprogne caspia*), Least Tern (*Sterna ablifrons*), and Sooty Tern (*Sterna fuscata*). The passerine with the greatest recorded longevity is a Common Grackle (*Quiscalus quiscula*) with an elapsed time between banding and recovery of 14 years, 2 months, and 15 days. [But see additional longevity records on pp. 55-73 in this issue—Ed.]—Roger B. Clapp.

4. **First overseas recoveries of Wedge-tailed Shearwaters banded in Australia.** D. Purchase. 1974. *Austral. Bird Bander,* **12**(2): 34-35.—Three *Puffinus pacificus* banded on islands off New South Wales were subsequently recovered in the Philippine Islands, where the bird was recorded formerly as only a straggler. Purchase suggests that in New South Wales breeding populations of this species, formerly considered rather sedentary, may disperse from the breeding area with at least some birds moving into the tropical seas of the western Pacific Ocean.—Roger B. Clapp.

5. **A lift-net for capturing male Ruffed Grouse.** C. A. Fisher. 1974. *J. Wildl. Manage.,* **38**(1): 149-151.—The author describes and figures a lift-net with which 9 of 14 drumming *Bonasa umbellus* were caught during 1971 and 1972 near Rochester, Alberta. Advantages of this set are that it can be left in place without disturbing drumming grouse and that it extends the season during which the birds can be caught by at least two weeks. It seems likely that the device could be adapted for catching other kinds of birds that occur at a fixed location or could be baited to such a location.—Roger B. Clapp.

6. A simple noose method for capturing nesting gulls. D. Miller. 1974. *West. Bird Bander*, **4**.(1): 10.—A method of capturing adult gulls is described. A slip noose at the end of a cord is placed over the nest so that the bird's legs are caught when the noose is suddenly pulled shut. The cord, a brown-stained chalk line in this instance, runs through a forked stick or eyed rod that is placed about one foot from the nest and serves to pin the bird to the ground when noosed. The author has used this technique on nesting Ring-billed Gulls (*Larus delawarensis*) and claims that it causes relatively little disturbance to the nesting bird, no more than would be caused by a human briefly visiting the nest site. Eggs in the nest are stated to suffer little if any damage but the technique was not used when young were in the nest for fear of injuring the young birds. —Roger B. Clapp.

7. Common Grackle recoveries: birds banded at Woodhaven bird banding station, Morrisville, Penna. M. Warburton. 1973. *EBBA News*, **36**(4): 231-232.—This brief note lists 15 foreign recoveries of *Quiscalus quiscula*, the oldest of which was recovered slightly more than 10 years, 10 months after banding.—Roger B. Clapp.

8. The age of blackbirds and Starlings. H. E. Burtt and M. L. Giltz. 1973. *EBBA News*, **36**(4): 224-226.—1,955 recoveries of Common Grackles (*Quiscalus quiscula*), Red-winged Blackbirds (*Agelaius phoeniceus*), Brown-headed Cowbirds (*Molothrus ater*), and Starlings (*Sturnus vulgaris*) are tabulated by the number recovered for each year after banding. A significantly larger proportion of the Cowbirds was recovered within two years of banding than was true for the other three species. The oldest Cowbirds and Redwings recovered were captured in the fifth year after banding; the oldest Grackle was captured in the sixth year after banding, and the oldest Starling was captured in the seventh year after banding.—Roger B. Clapp.

9. Ten-year old Song Sparrow. Anon. 1974. *West. Bird Bander*, **49**(1): 14.—A bird banded by Allegra Collister at Longmont, Colorado, on 7 October 1963 was recaptured on 18 October 1973 at an elapesd time of 10 years and 11 days. This is apparently the greatest longevity yet recorded for *Melospiza melodia*. [But see p. 73 of this issue for an older bird—Ed.]—Roger B. Clapp.

MIGRATION, ORIENTATION, AND HOMING

(See also 28, 51, 76)

10. Bird migration over the North Atlantic. J. M. Williams, T. C. Williams, and L. C. Ireland. 1974. Proc. Conf. on the Biological Aspects of the Bird/Aircraft Collision Problem (S. A. Gauthreaux, ed.). Pp. 359-382.—These Proceedings contain papers presented at a conference held at Clemson University, 5-7 February 1974. There are 25 papers plus one abstract in the volume. Most deal with practical aspects of the bird/aircraft collision problem and approaches to its solution. There are several papers of more direct interest to studies of migration and orientation and I shall review those that provide substantial new data not published elsewhere.

During the fall migration seasons of 1969 through 1973, a variety of radars along the eastern coast of North America, on Bermuda, and in the Lesser Antilles were monitored simultaneously for bird migration. In 1972 and 1973 shipboard radars were also used. Maximum coverage was realized in 1973 when nine radars were in operation simultaneously. The variety of radars used (weather radars, long-range trackers, short-range trackers) precluded precision in quantifying migration at the various sites. Therefore, density categories of light, medium, and heavy were used.

The most important result of this study is the direct documentation of apparently nonstop flights of birds from northeastern North America across the Atlantic to the Lesser Antilles and South America. In one case a single movement was apparently tracked during the whole crossing, a flight of 50 to 80 hours. Heavy departures from New England and Nova Scotia were correlated with the passage of cold fronts, as Richardson and others have noted. As might be expected, post-frontal conditions do not prevail for the entire ocean crossing. Thus in the Caribbean heavy migrations were not correlated with local weather conditions. Both passerines and shorebirds were apparently involved in the trans-Atlantic flights although displays on coastal radars (Figs. 3 and 4) suggested that most passerine-type echoes were moving parallel to the coast whereas dot echoes characteristic of shorebirds moved offshore toward the southeast or south. Most transoceanic migrants continued on a southeastward track at least 1,000 km beyond Bermuda and apparently turned toward the southwest upon reaching the trade wind zone.

The altitude of migrants passing over Antigua and Barbados was much higher than at any of the other sites, including Bermuda. Heavy and moderate movements occurred above 3,000 m at Antigua; most migrants were below this altitude at Bermuda and the coastal sites. Altitudes were also low at Tobago. Because the same type of radar was used at each of the Caribbean stations, a real phenomenon appears to be involved. Given this peculiarity, I believe more data are required to establish that the migrations passing over these several stations were part of the same broad movement.—Kenneth P. Able.

11. Radar observations of bird migration over Bermuda. L. C. Ireland and T. C. Williams. 1974. Proc. Conf. on the Biological Aspects of the Bird/Aircraft Collision Problem (S. A. Gauthreaux, ed.). Pp. 383-408.—Radar observations from Bermuda formed part of the large-scale study of migration over the western Atlantic Ocean reported in the preceding paper. This paper discussed the data from Bermuda in greater detail. Two long-range tracking radars (AN/FPQ-6; AN/FPS-16) were used in both the surveillance and tracking modes. Thus information on the broad pattern of migration could be obtained from time exposures of the radar PPI display and detailed data on the flight behavior of individual birds from automatic tracking of single birds or flocks. The station was manned each fall from 1969 to 1972. Because these NASA radars can be operated only by a crew of trained employees and because they are used in other projects, bird tracking had to be done on a time-available basis. This precluded continuous coverage and limited nocturnal monitoring to only eight occasions. Frustrations of this sort, plus breakdowns, rather severely limited the quantity of data collected (e.g., automatic tracking was done on only 29 days during the four seasons).

Data obtained from photographs of the PPI revealed three patterns of migratory movement: (1) flights toward the southeast and south occurred in light and variable winds and in stronger winds from the northwest and north. The largest movements recorded at Bermuda were in these directions and followed the passage of cold fronts across the Atlantic coast of North America. (2) Light movements to the east and east-southeast occurred on two days with moderate winds from the south and west. (3) Flights toward the southwest occurred on three days with moderate to strong winds from northeast-east. A very light northward movement occurred in southerly winds produced by a hurricane located south of the island. The resultant vector of all the data obtained in the surveillance mode was strongly toward the south-southeast, but it must be remembered that the data do not constitute a random sample.

The average number of tracks obtained per day was only 9.7. Many of these were coupled with radar signatures (AGC). Based on these signatures, about 18 percent of the birds appeared to be passerines whereas the remainder had signatures characteristic of shorebirds/waterfowl (39 percent) or flocked birds (43 percent). Based on these data and the air speeds of the birds tracked, the authors concluded that the majority of their targets were probably passerines and small shorebirds. I think the evidence is fairly convincing that the majority were shorebirds. The migrants did not appear to be influenced by the island and most tracks were quite straight and level. A plot of the daily mean vectors of tracks also shows a south-southeast mean, but with considerably more scatter than the data from the PPI photographs. Sample sizes are very small for this sort of analysis, and some of the daily means are surely not statistically significant, although the authors make no statement concerning this. The corresponding plot of headings is nearly identical with similar mean direction. The mean vector of this distribution should be highly significant. Therefore, I cannot agree with the authors' statement that there was no preferred heading among the birds passing over Bermuda. Considerable error in the computation of these headings may exist because winds aloft data were obtained only twice daily, and the authors state that winds in the area of Bermuda were extremely variable.

Analysis of the tracking data yielded some interesting results. Based on radar signatures, passerine birds accounted for nearly six times more northward tracks (65 percent) than tracks toward the other three quadrants. Most of these tracks were obtained during the two days with southerly winds associated with Hurricane Ginger. Signatures characteristic of shorebirds and flocked birds accounted for about 80 percent of tracks moving toward easterly, southerly, and westerly directions. The average deviation of tracks from downwind was greatest (72°) for southward tracks. This might seem surprising at first, but birds flying in this direction also had airspeeds averaging 15 km/hr faster than the other directional groups. Thus all characteristics suggested that this group consisted largely of shorebirds. Birds moving in directions other than southward were predominantly heading south of their track directions and were apparently being drifted. In neither this paper nor the preceding one do I find convincing evidence that passerine birds comprise more than a small fraction of the trans-Atlantic migrations. Nonstop flights of this magnitude are impressive regardless of the species involved, but they would be much more impressive if really large numbers of landbirds were involved.—Kenneth P. Able.

12. Multivariate approaches to forecasting day-to-day variations in the amount of bird migration. W. J. Richardson. 1974. Proc. Conf. on the Biological Aspects of the Bird/Aircraft Collision Problem (S. A. Gauthreaux, ed.). Pp. 309-329.—John Richardson has experimented more than anyone else with miltivariate statistical techniques applied to migration data. Therefore, it is useful to have this compendium of the techniques most applicable to the analysis of relations between migration magnitude and weather variables. Two main analyses are discussed: multiple regression is appropriate for continuously-scaled migration densities and multiple discriminant analysis is used for categorically-scaled data. Techniques used in performing these analyses are discussed and illustrated with some real radar data. There follows a discussion of the assumptions underlying the analyses and means of overcoming violations of these assumptions. There is a brief discussion of factor analysis, a technique that has not previously been applied to migration data. Because this method reduces the set of predictor variables to a few uncorrelated factors, it can be extremely useful in studies of migration in relation to weather. Weather variables are invariably highly intercorrelated, making inferences about causal relationships impossible.—Kenneth P. Able.

13. The effect of directional experience on initial orientation in pigeons. H. G. Wallraff. 1974. *Auk,* **91**:24-31.—This paper was prompted by a paper by Alexander and Keeton (*Auk,* **89**:280-298, 1972) in which they failed to find an effect of directional training on initial orientation in pigeons from their loft in Ithaca, New York. Wallraff had previously reported that the individual experience gained from previous homing flights is one of the various factors determining the initial bearings of displaced pigeons. In this paper Wallraff discusses the matter again and publishes all the data he has relevant to the effect. He reconfirms his earlier conclusions. The pigeons appeared to be deflected toward the side of the homeward direction of their last preceding flight, which was usually their first flight. The magnitude of this deflection varied greatly, and the degree to which the birds followed the influence ranged from nearly zero to 100%. Wallraff concludes that this kind of an experience effect is a rather general phenomenon in pigeon homing.—Sidney A. Gauthreaux, Jr.

POPULATION DYNAMICS

(See 14, 15, 18, 21, 36, 38)

NESTING AND REPRODUCTION

(See also 24, 26, 40)

14. The breeding cycle of the Wedge-tailed Shearwater on Mutton Bird Island, N.S.W. N. M. Swanson and F. D. Merritt. 1974. *Austral. Bird Bander,* **12**(1): 3-9.—This study is based on banding and observations made between 1960 and 1973 with most intensive work occurring from 1969 through 1973. During this period 2,233 nestlings and 9,748 adults were banded. Birds return to the colony by early August with most birds present by the latter part of the month. From September through early November birds were occupied in digging and cleaning burrows and in pair formation. Copulation was observed between 18 August and 17 October. From the middle of November through late November numbers of birds present declined sharply as birds exhibited a pre-egg laying exodus. Eggs were laid in a fairly sharply defined period of about 10 days from late November through early December. December and January were devoted to incubation with the earliest young being found on 14 January. Young were present through the first week of May at which time both adults and young departed the island until the following August. Although the data are sparse, recovery information on birds banded as nestlings suggest that birds do not breed until their seventh year although some young birds may be found in the colony as soon as a year after fledging. If it is true that birds do not breed until their seventh year then the oldest birds found in the colony were on the order of 19 years old. This paper is a good example of what can be accomplished in the way of determining breeding cycles from intermittent visits to a seabird colony.—Roger B. Clapp.

15. Annual production of fledged young from the Eider colonies of the St. Lawrence estuary. H. Milne and A. Reed. 1974.. *Can. Field-Nat.,* **88**:163-169.—Habitat significantly affects the reproductive success of Common Eiders (*Somateria mollissima dresseri*) nesting on islands in the St. Lawrence estuary. From 1963 to 1972 the mean of 3.37 eggs/nest on the open grassy islands was significantly less than the mean of 3.76 eggs/nest for grassy, shrubby islands and the mean of 3.74 eggs/nest on wooded islands. On open, grassy islands 0.5 ducklings/nest were hatched compared with 1.1 ducklings/nest on grassy, shrubby islands and 1.3 ducklings/nest on wooded islands. No data were collected on duckling survival after the trek to the water, but data collected previously in Nova Scotia suggest survival to fledging of 24.5% or an average of 0.3 ducklings/nest for all birds breeding in the estuary.

The poor reproductive success on open, grassy islands may result from poor nest concealment and the increased population of Herring Gulls (*Larus argentatus*) that prey on the eggs. The eider population on open, grassy islands has declined over the past 34 years whereas the eider population on the shrubby and wooded islands has remained the same or increased over the same period.

Unfortunately the authors present no quantitative data on the habitat types. The lack of data limits comparison of the different eider colonies. I question the use of the term "pair" for eiders when the male does not participate in raising the young.—Edward H. Burtt, Jr.

16. On some little-known bird eggs. (Uber einige wennig bekannte Vogeleier.) W. Makatsch. 1974. *Bonn. Zool. Beitr.,* **25**(1-3): 148-164. (In German.)—Contributions to oölogy are infrequent in current literature, and likewise rare are good illustrations of bird eggs. The two color plates show remarkable "real-as-life" egg series of several species, including those of the boreal Rufous-necked Sandpiper (*Calidris ruficollis*), Sharp-tailed Sandpiper (*C. acuminata*), Ross' Gull (*Rhodostethia rosea*), and Sabine's Gull (*Xema sabini*).—Leon Kelso.

17. Breeding behavior of captive Striped Owls (*Rhinoptynx clamator*). A. Goodmen and E. Fisk. 1973. *Avic. Mag.,* **79**(5): 158-162.—Eggs laid in captivity numbered 3 or 4 but only one chick was reared. The other eggs and chicks "disappeared." Eggs are unspotted pinkish buff and laid at about 60-hour intervals. Incubation is about 33 days. The subject pair, from Iquitos, Peru, reared 5 young from 1969 to 1973. One female caged with a male Spectacled Owl (*Pulsatrix perspicillata*) produced infertile eggs. A 60-day-old juvenile, placed in a cage with *Pulsatrix,* was preened and fed by it.—Leon Kelso.

18. The auxiliary social system and its effect on territory and breeding in Kookaburras. V. Parry. 1973. *Emu,* **73:** 81-100.—Kookaburras (*Dacelo gigas*) inhabitat woodlands in the wetter areas of Australia where they are permanent residents on territories shared with a single permanent mate or with a family consisting of a mate and one or more mature offspring. The author proposes to call these offspring "auxiliaries" replacing the terms "helper" (Skutch, *Condor,* **63:** 198-226, 1961) and "supernumerary" (Rowley, *Emu,* **64:** 251-297, 1965), both of which connote causal or accidental extra-parental care, particularly in aviaries and often between different species. Auxiliary denotes a characteristic feature of a social system. The distinction is important and useful.

Territory size correlates with the number of birds present in July and August when boundary adjustment are made. The small clutches hatch asynchronously. Pairs without auxiliaries raise 1.2 fledglings per pair, those with one or more auxiliaries raise 2.3 fledlings per pair. Mortality among juveniles of families is less than among juveniles of pairs probably because of a more gradual transition to independence within families. Auxiliaries accounted for 32% of the incubation, brooding, or guarding time at the nest and up to 60% of the food items brought to nestlings and fledglings. Assistance from the auxiliaries allows the reproductive pair sufficient time for occasional second broods or late replacement clutches when clutches or nestlings are taken by predators.

The author's suggestion that the auxiliary system is a long-term adaptation for reducing fertility is wholly without support. Those individuals that maximize their contribution to the gene pool will determine the reproductive strategy of the species. From 1965 to 1967 no offspring of pairs without auxiliaries survived to reproduce whereas seven young within families survived. All seven became auxiliaries, but three other auxiliaries became reproductives during this period. Data on the number of pairs with and without auxiliaries, and the number of auxiliaries per pair are provided on page 84 for 1965 and 1966. Using the stated mean reproductive potential of 1.2 young/pair without auxiliaries and 2.3 young/pair with auxiliaries, the potential production for the observed distribution of pairs and families for the two years is 39.6 young. If the total number of birds including auxiliaries, 67, is assumed to form the maximum number of pairs, 33, then the reproductive potential is 39.6 young. Therefore the auxiliaries do not affect the reproductive potential of the population studied, nor can I account for the evolution of reduced fertility except by invoking group selection.

Possibly the auxiliary system has evolved because young birds are frequently unable to obtain territories or because prior experience in caring for eggs and young increases the chance for success when an auxiliary does mate and reproduce. These hypotheses are neither tested nor mentioned. Although longevity may be important to the functioning of a system of delayed maturity, longevity is not a causal factor as suggested. The described behavior is interesting as is the social system of Kookaburras, but the interpretations ignore the data. Study of several generations will be necessary before a careful analysis of advantages and disadvantages of an auxiliary reproductive system is available.—Edward H. Burtt, Jr.

19. A possible Yellow-shafted Flicker nest in a river bank. N. K. Verbeek. 1974. *Can. Field-Nat.,* **88:** 233-234.—Although the nest site could not be checked for the presence of eggs, a Yellow-shafted Flicker (*Colaptes auratus auratus*) was observed entering and leaving a river bank burrow 5 m above the water. The flicker's occasional use of Belted Kingfisher (*Megaceryle alcyon*) and Bank Swallow (*Riparia riparia*) burrows was noted by Burns (*Wilson Bull.,* **7:** 1-82, 1900), but the author suggests that such nest site selection may be an important factor that allows flickers to invade areas where trees are scarce (e.g., northern Canada). Indeed the flicker nests farther north than any other American woodpecker (Godfrey, *Nat. Mus. of Can. Bull.,* **203,** 1968) except the Northern Three-toed Woodpecker (*Picoides tridactylus*), but its nesting habits in these northern regions require study.—Edward H. Burtt, Jr.

20. Growth rates of young passerines and the flexibility of clutch size. S. D. Fretwell, D. E. Bowen, and H. A. Hespenheide. 1974. *Ecology,* **55:** 907-909.—The authors propose several modifications to the model developed by Ricklefs (*Proc. Natl. Acad. Sci.,* **61:** 847-851, 1968) relating clutch size to the length of time required to feed the nestlings. The maximum increase in feeding times for various clutch sizes (based only on excess feeding capacity) is less than

Ricklefs calculated. Energy costs for maintenance of the young are considered separately from growth demands, further modifying the predictions. High nest mortality rates, such as in the tropics, would result in more young per clutch with one less egg than Ricklefs would predict for those cases in which excess feeding capacity was only marginally greater than that needed for the smaller clutch size.—B. Dennis Sustare.

21. Some features of the breeding biology of the Penduline Tit in the Volga delta. (Nekotorye osobennosti biologii razmnozheniya remeza (*Remiz pendulinus*) v delte Volgi.) P. Tretyakov. 1973. *Z. zhurn.*, **52**(12): 1,880-1,882. (In Russian.)—In the Astrakhan Reserve 56 nests of *Remiz pendulinus* were observed through various stages of the breeding cycle between June and August from 1965 to 1968. Some averages: length of suspended structure, 13 cm; nest depth, 14 cm; length of entrance passage, 4.5 cm; diameter of entrance passage, 3.2 cm; and nest weight, 39 g. Accessory or unfinished nests weighed 5 to 6 g with all nest proportions smaller. First-year birds recently returned from migration are thought to be the builders of these accessory nests, most of which were occupied by males in the morning and late evening. All nests were hung on twigs 1 to 3 m above water. Nests constructed in the spring were larger than those of midsummer. Spring nest building took 20 to 22 days, and nest material was carried on 8 to 10 visits per hour. Loss of normal occupied nests was 18%. Three were lost to wind damage, and four to corvids. Nest duties were by the female. Incubation began with the third egg and took 14 to 15 days; hatching took 2 to 3 days. Young were in the nest 17 to 20 days. Return after the first departure was rare, but in one case it was repeated for 5 days. The males' singing intensity followed a bimodal curve, the morning peak double the evening with a moderate rise about noon. The birds were active 17 hours per day.—Leon Kelso.

BEHAVIOR

(See also 18, 19, 21, 35, 40, 68, 72, 73, 74)

22. Head twitching and quivering behavior of many Cracidae interpreted as emotional stimuli. (Scuotimento e tremolio del capo, costume cmmune a molti Cracidae (Galliformes) interpretati come consequenza di determinati stimoli emotioni.) A. Taibel. 1973. *Natura* (*Rivista, Sci. Nat., Milano*), **64**(a): 139-146. (In Italian with English summary.)—Peculiar varieties of display, noted in males of the genera *Ortalis, Penelope, Pipile, Mitu, Nothocrax,* and *Crax,* are described and reinterpreted as aggressive male nuptial stimuli rather than as a "spasmodic tic." The head twitching is not for shaking annoying matter out of eyes, as was once suggested. It was previously described as "a nervous twitching of the head" and as a "side to side twitch of the head and upper neck" (G. Flieg and R. Dooley, *Condor,* **74**: 484, 1972). Male invitation to nest building is another suggestion. Yet others are: evocation of sympathy, submission, alarm, and fright. What proportion of this study is based on original observations is not clear.—Leon Kelso.

23. The strut display of male sage grouse: a "fixed" action pattern. R. H. Wiley. 1973. *Behaviour,* **47**: 129-152.—Tape recordings were used to measure the duration of the auditory component of the display of male *Centrocercus urophasianus.* The coefficient of variation is less than 4% for duration, but of much higher variability for interstrut-intervals. No geographic differences were found. A number of studies are now found in the literature on quantitative variability of behavioral patterns, and this variability is large in some cases and small in others, such as Wiley's Sage Grouse. The general idea that patterns serving as signals are less variable than others is only partially borne out by these studies. There will be variation in anything biological, and in behavior we find variation not only among individuals but among performances by the same individual. It seems best at this point to abandon the fruitless discussion of whether an action pattern is or is not "fixed" and concentrate instead on trying to explain the degree of variability in each case, as Wiley attempts here for the Sage Grouse's strut.—Jack P. Hailman.

24. Territoriality and non-random mating in Sage Grouse, *Centrocercus urophasianus*. R. H. Wiley. 1973. *Anim. Behav. Monogr.*, **6:** 85-169.—The study describes an extreme form of polygynous behavior, in which up to several hundred males gather in a display ground (or lek) to which females come for copulation. Certain traditional areas within the lek are mating centers where copulation takes place year after year, and males with territories in these regions do most of the copulating. Less than 10% of the males may perform more than three-quarters of the copulations. Young males establish territories on the periphery, and because each male always obtains a territory no farther from a mating center than his previous year's territory, there is progressive centripetal movement of males toward the mating centers as they grow older and central males disappear (presumably due to mortality). This is a fine study, and it includes comparisons with what is known of mating systems in other grouse.—Jack P. Hailman.

25. Observations on a relationship between Crested Guineafowl and Vervet Monkeys. G. Hill. 1974. *Bull. Brit. Orn. Cl.*, **94**(2): 68-69.—Flocks of *Guttera edouardi* commonly feed on the ground beneath groups of Vervet Monkeys, eating berries and seeds dropped in large quantities by the monkeys, and probably also taking seeds from the feces of the monkeys. The birds seem less frightened of human observers while accompanying a group of monkeys, but like other forest animals they benefit from the monkeys' alarm calls, moving quickly away when the monkeys begin to bark. It is also suggested that the monkeys derive the same advantage from the alarm calls of the guineafowl, but as worded this suggestion seems less convincing.—John Farrand, Jr.

26. Behavioural dimorphism in male Ruffs, *Philomachus pugnax* (L.). J. G. van Rhijn. 1973. *Behaviour*, **47:** 153-229.—This large European shorebird is a lek species, in which the males gather at a display site (lek or arena) and females (called Reves by the British) come to be serviced. In 1966 Hogan-Warburg found that there were three kinds of males in this complex courtship situation: resident males that defend territories (or residences) in the center of the lek, marginal males that do not hold territories and are excluded from them, and satellite males that are able to walk through territories with impunity. Marginal males may hold territory at another lek, or may interchange status with a resident male by winning his territory. Resident and marginal males together are known as independent males. Independent males have dark plumage and engage in much fighting and displaying, whereas satellite males are mostly white and become involved in few altercations. Against this background van Rhijn attempted to discover the factors that produced differences in behavior among the types of males, his underlying hypotheses apparently being either (1) that the differences in coloration produced differences in the way males were treated by other males, and hence led to differences in their own behavior through external stimulation; or (2) that plumage differences were correlated genetically with fundamental internal organizations of behavior that produced the differences. The study is long and the results and arguments are complicated, so that no brief summary can be adequate.

The study was done in the Netherlands using motion picture film, and the first part is a description of the behavior divided into postures (general body attitudes), locomotion types, action sequences (sort of categories of related action patterns), and actions. Because all three kinds of males as well as females show all behavioral units, differences among types of individuals occur in the frequency and sequencing of these units. Some traditional analyses are made of the relations among units in ongoing behavior, and a conceptual two-component motivational categorization is conceived as a "model" of Ruff behavior. The data are interpreted as showing that under the "same" set of environmental circumstances the behavioral sequences of females and satellite males are different from those of independent males. In other words, some of the behavioral differences are due to environmental situations and some of the differences cannot be accounted for thusly.

Van Rhijn then analyzes the correlation between behavior and plumage type and finds less of an absolute correlation than did Hogan-Warburg. Van Rhijn thinks the data are consistent with a balanced polymorphism of underlying genetics, which produces a correlation between behavior and plumage, but that there is further modification of behavior by individual experience and the general external situation. The conclusion seems reasonable enough, considering that no real data (from breeding experiments) are available to settle the issue.

In the next section the author attempts to show that satellite males encourage the presence of females on the residencies. Therefore, when females are in short supply the resident male's best strategy is to tolerate satellites but when females are in abundance the resident should repel satellites.

Finally, the author tries to account for the maintenance of such a complex situation, offering two hypotheses that would promote a balanced genetic polymorphism in the populations. One hypothesis is that the heterozygotes (males with atypical plumages intermediate between dark residents and white satellites) are at an advantage, so that both alternative alleles are passed to the most commonly produced offspring, where recombination produces the two kinds of homozygotes that are selected against. The other explanation is essentially that dark residents (one kind of homozygote) are sometimes at an advantage and white satellites (the other homozygote) are at other times at an advantage so that heterozygotes occur via recombination.

I think one conclusion is safe: we really do not yet understand the complicated lek system of the Ruff. The present study helps, but it is sprinkled with more speculation and *ad hoc* argument than would be desirable. In my view what is required at the least is first, some cold, hard genetical data from breeding experiments and second, some more direct measures as to which male successfully inseminates under diverse natural conditions. These are tough studies and van Rhijn cannot be faulted for not having attempted them.—Jack P. Hailman.

27. The response of incubating Laughing Gulls (*Larus atricilla* L.) to calls of hatching chicks. M. Impekoven. 1973. *Behaviour,* **46**: 94-113.—Calls of hatching chicks were recorded in an incubator and played back to parents in the wild via a speaker under the nest-cup. The playbacks caused increase in behavior such as looking down, rising and resettling, shifting the eggs, quivering, and calling. Furthermore, playbacks at half normal speed did not have as large an effect. These experiments, plus observations on the parents made while monitering the sounds from the nest via a microphone, suggest that sounds of the hatching chicks help to shift parental behavior from the incubation phase to care for the young.—Jack P. Hailman.

28. "Cloud cutters." A. Lobov. 1974. *Soviet Life,* **1974**(6): 10. (In English.)—This pigeon breed, called "Nikolayev Doves," is evidently one of those locally developed strains, which have been bred in numerous Eurasian towns over the centuries. These pigeons, reportedly peculiar to the city of Nikolayev, Russia, orient vertically only. If transported horizontally or windblown, they will not "home." Released at twilight they rise high in the air and hover seven to ten hours nonstop, and descend at dawn. This rivals the nocturnal midair roosting of the Common Swift (*Apus apus*).—Leon Kelso.

29. Locatable and nonlocatable acoustic signals for Barn Owls. M. Konishi. 1973. *Amer. Nat.,* **107**: 775-785.—Konishi trained three accomodating *Tyto alba* to strike at a sound-source in the dark, and then played different signals and recorded automatically the accuracy of the strike. Owls best localized the sounds at 7 and 8 KHz, striking less accurately at lower and higher frequencies. Konishi argues that the birds must have utilized the difference in intensity at the two ears for localization, not the difference in arrival-time or phase of the sound. Because a larger bandwidth of frequencies provides greater intensity information, Konishi believes pure tones are difficult to locate on this basis alone (not because they eliminate phase-comparisons as Marler suggested). Furthermore, because vocalizations have noisy transients at the onset of sound, a nonlocalizable call should avoid breaks because of the wide frequency band supplied for intensity-comparison, whereas Marler thought the absence of breaks was to avoid arrival-time cues. Therefore, Konishi believes Marler to have correctly predicted the physical characteristics of nonlocalizable alarm calls in passerine birds, but for the wrong reasons. Yet Barn Owls are not the predators of the diurnal songbirds that concerned Marler and the relevance of Konishi's experiments to the alarm-call problem is tenuous. Furthermore, Marler's theory deals with *directional* localization, whereas Konishi's experiment measures total error (direction plus distance localization). It is quite clear from Figure 2 that at 6 KHz the owl's inaccuracy was primarily one of distance localization, whereas at 10 KHz it was almost totally a directional error. The confounding of issues therefore renders the criticism of Marler less cogent, and the confounding of error-types renders Konishi's analysis open to question.—Jack P. Hailman.

30. Differential predation on Gerbils (*Meriones*) by the Little Owl, *Athene brahma*. D. Lay. 1974. *J. Mammal.*, **55**(3): 608-614.—This study tested the role of gerbils' visual ability in escaping predation by the owl while confined in cages. Various species of rodents, normal and artificially blinded, were used. With *Meriones libycus*, for example, adults were never caught in many attempts, whereas all juveniles were seized, whether normal or blind. It is implied that their hearing capacity enabled the blinded adult gerbils to escape, yet there were no tests using rodents with surgically impaired hearing. The "brahminizing" of the owl's name, *A. "brahma"* instead of the accepted *A. brama* in check-lists, seems to be the suggestion of the author or editor.—Leon Kelso.

31. Pinon seed assessment by the Pinon Jay, *Gymnorhinus cyanocephalus*. J. Ligon and D. Martin. 1974. *Anim. Behav.*, **22**(2): 421-429.—Good versus bad seeds were distinguished accurately in the main by captives of three age groups: wild-caught adults, hand-reared juveniles, and yearlings. Apparently all used visual, tactile (apparently weight), and auditory (bill clicking) cues. Discrimination improved with practice. Spoiled seeds weighted with lead shot caused momentary confusion. Inexperienced individuals gave immediate preference to pinon seeds over other trial objects. Apparently seed discrimination was learned, but "bill-clicking" (rapidly snapping mandibles open and shut to seed surface) was instinctive, "as it appears in young birds in a variety of contexts. The relationship between sounds perceived, external coloration, weight and seed quality must be integrated by experiential processes." Only by completely reading this paper can one appreciate its scope and depth.—Leon Kelso.

32. Cues used in searching for food by Red-winged Blackbirds (*Agelaius phoeniceus*). J. Alcock. 1973. *Behaviour*, **46**: 174-188.—Briefly, birds foraging in a wooden contraption continued to hunt in the same places and take the same foods for some time after changes in the situation—an example of specific "search image" foraging as proposed by L. Tinbergen in 1960.—Jack P. Hailman.

33. Effects of parental colouration on the mate preference of offspring in the Zebra Finch, *Taeniopygia guttata castonotis* Gould. M. J. Walter. 1973. *Behaviour*, **46**: 154-173.—At 28 days of age young of three crosses were removed from their parents: normal x normal parents, white x white, and normal x white. For eight weeks the young birds were put in isolation: some visually and auditorily isolated, others visually isolated only, and still others isolated from members of the opposite sex. Finally, the birds were given a choice of normal or white mates. Females always chose normal males, and males always chose the color of their parents, if both were the same, or showed no choice if their parents were of different color. The author calls the effect imprinting. Imprinting is supposed to be a very rapid learning with no patent rewards; when birds are fed by their parents for 28 days it hardly seems sensible to term the perceptual learning imprinting, at least on the basis of the experiments reported.—Jack. P. Hailman.

ECOLOGY

(See also 15, 18, 20, 57)

34. Relative biomass of Ethiopian and Palaearctic passerines in west Kenya habitats. P. L. Britton. 1974. *Bull. Brit. Orn. Cl.*, .4(3): 108-113. —Previous work has suggested that Palearctic migrants make up about 20 percent of the African non-forest avifauna, but this estimate is based on the relative numbers of species and not on counts of individuals or determinations of relative biomass. By means of netting, counting, and weighing non-granivorus passerines in several habitats in western Kenya, the author shows in this important paper that the impact of Palearctic visitors is much greater in some habitats than in others. The most important habitat for northern migrants seems to be thickets of introduced *Lantana*, where the proportion of Palearctic insectivorous and frugivorus passerines is as high as 27 percent (25 percent of the biomass) during the winter and 60 percent (50 percent of the biomass) during the passage months of October and November. The proportions are also high in well-grazed, seasonally inundated *Acacia* savanna. In other habitats the numbers and biomass of northern visitors are much lower, although they are higher in all if aerial feeding swallows are included. Forest and swamp are of little importance to Palearctic immigrants. These findings suggest that the clearing of forest will increase the resources available to the northern birds, especially insofar as this contributes to the spread of *Lantana* and other plants of disturbed habitats. —John Farrand, Jr.

35. On nesting persistence of some species of waterfowl. (O gnezdovom konservatisme nekotorykh vidov vodoplavayushchikh ptits.) A. Ilenko and I. Rybatsev. 1974. *Z. zhurn.*, **53**(2): 308-310. (In Russian with English summary.)—A small section of wetland was lightly contaminated with strontium 90 in order to trace the postnesting dispersal of five common species of ducks, particularly the Mallard (*Anas platyrhynchos*) and the Gadwall (*A. strepera*). In subsequent analysis, 40 of the 70 males examined accumulated Sr90 residue in various parts of the body in relatively small amounts. Radiostrontium concentrations in skeletons, for example, ranged from 0.1 to 0.5 units. In contrast, 32 of 33 females examined accumulated Sr90 residue almost throughout their bodies, with skeletal concentrations from 5.0 to 9.0 units. The authors conclude that females spend more time at the nesting localities than do males. This may be challenged if one recalls that inherent sexual differences in susceptibility to chemicals have long been known.—Leon Kelso.

36. Distribution of the Snowy Owl on the Yakutian Tundra. (Osobennosti rasprostraneniay polyarnykh sov (*Nyctea scandiaca* L.) v tundrakh Yakutii.) O. Egorov. 1971. *Trans. Northeastern Institute Complex*, No. 42: 61-63. (In Russian.)—Opportunities to census the Snowy Owl on its breeding grounds in July and August are rare, but this study includes 4 seasons, from 1963 through 1966. The birds were counted from an airplane or a helicopter from heights of 15 to 100 meters. The tundra surveyed was in the Kolyma, Lena, and Indigirka maritime areas and on the nearer Novosibirskie Islands. This area totaled about 30,000 km^2, over which the author flew about 3,800 km^2. An interesting contrast emerged on comparison of the mainland and island populations. The density of the latter was about 20 times higher. Thus, 2,300 km flight over the mainland discovered only 11 owls, whereas 1,500 km over the islands found 161 owls, or 0.1 versus 2.15 per 10 km^2. Eighty resident Snowy Owls were seen on Kotelno Island alone. This sample was extrapolated to a possible total of 2,800 on the island as a whole. Reasons suggested for the difference in density were that mainland tundra had denser grass growth to shelter lemmings and other prey, and also had a greater abundance of such raptor competitors as the Rough-legged Hawk (*Buteo lagopus*), jaegers (*Stercorarius* spp.), gulls (*Larus* spp.), and the Short-eared Owl (*Asio flammeus*).—Leon Kelso.

37. Dissemination of seeds of the Eastern Dwarf Mistletoe by birds. G. Hudler, T. Nicholls, D. French, and G. Warner. 1974. *Can. J. For. Res.*, 4(3): 409-412.—In a mistletoe-infected Black Spruce (*Picea mariana*) forest in Minnesota, seeds of *Arceuthobium pusillum* were found adherent to neck feathers of Gray Jays (*Perisoreus canadensis*) 1 to 5 each on 4 birds. They were carried as far as 100 m. Vigorous action by jays during removal from mist nets did not dislodge the seeds from the feathers.—Leon Kelso.

WILDLIFE MANAGEMENT AND ECONOMIC ORNITHOLOGY

(See 35)

CONSERVATION AND ENVIRONMENTAL QUALITY

38. Sea Otters: their role in structuring nearshore communities. J. A. Estes and J. F. Palmisano. 1974. *Science,* **185:** 1058-1060, and cover.—The thesis is that Sea Otters (*Enhydra lutris*) control populations of animals, such as sea urchins, which, in turn, largely prevent the growth of macrophytic algae. The otters in some way render the ecosystem favorable to harbor seals and Bald Eagles. Observations were made at Rat and Near Islands.—Charles H. Blake.

39. The results of ringing Auks in Britain and Ireland. C. Mead. 1974. *Bird Study,* **21**(1): 45-86.—An abundantly detailed report with the special message being that international action to prevent oil pollution would benefit all populations, and the outlook would be improved if shooting for sport could be banned. "Evidence from ringing rehabilitated birds does not suggest that the (plumage cleaning) methods were often successful."—Leon Kelso.

PHYSIOLOGY

(See also 20)

40. Avian incubation. F. N. White and J. L. Kinney. 1974. *Science,* **186:** 107-115.—This is an important review of the factors resulting in egg temperature regulation. Two extremes of incubation strategy are recognized: (1) bisexual incubation in which both members of the pair share the task evenly and (2) single sex intermittent incubation, a single parent taking on the entire task of hatching the eggs but leaving them at intervals when feeding. Between these extremes are examples of feeding of the sitting bird by its mate, constant sitting by one bird at the expense of fat reserves, and a few other unusual strategies. Of these strategies bisexual incubation appears to be the more primitive pattern, single sex intermittent incubation being apparently correlated with advanced nest structure.

The paper is extensively documented with data both from the literature and from the authors' original observations on the Village Weaverbird (*Ploceus cucullatus*). White and Kinney show that night-time egg temperatures are regulated primarily by tightness of sit whereas day-time temperatures are determined by attentiveness (minutes of incubation/hour). Attentiveness varied with environmental temperatures to yield a rectangular hyperbolic curve: these data showed that attentiveness dwindled to zero at an ambient temperature of 37.0 ± 1.5° C which closely matched the mean maximum night-time egg temperature of 36.7° C. Much of the 1.5° C "uncertainty" in zero attentiveness temperature was due to differences between individual birds, and these differences in turn correlated with differences in nest structure as measured by cooling rates of unincubated eggs. Anesthetizing the brood patch of incubating birds yielded abnormally high egg temperatures in consequence of over-close sitting. Finally, calculations showed that incubation below 34° C was possible only at the expense of foraging time.

White and Kinney provided a diagram illustrating the supposed pathways by which the factors they examined might interact to regulate egg temperatures. Testing and quantifying the predictions of this model should provide a fruitful field of research for some time to come.—Raymond J. O'Connor.

41. Hematological values of some great flying and aquatic-diving birds. J. Balasch, J. Palomeque, L. Palacois, S. Musquera, and M. Jiminez. 1974. *Comp. Biochem. Physiol.,* **49A:** 137-145.—The stated purpose of this paper was "to compare hematological values of birds with different energetic and oxygen requirements" but these latter were assessed only by categorizing the species into "good fliers," "aquatic diving birds," and "plumage divers." The "great" of the title appears to be intended as a synonym of "large." All individuals studied were obtained from Barcelona Zoo. The results tabulated may prove of use to future compilers of avian haematological data, but the paper otherwise provides little of interest to ornithologists.—Raymond J. O'Connor.

42. Oxygen affinity of bird blood. P. Lutz, I. Longmuir, and K. Schmidt-Nielsen. 1974. *Respir. Physiol.,* **20**(3): 325-330.—It was formerly believed that bird blood has low affinity for oxygen in comparison with that of mammals. But blood analyses of Rhea (*R. americana*), Mallard (*Anas platyrhynchos*), Fowl (*Gallus domesticus*), Ring-necked Pheasant (*Phasianus colchicus*), Pigeon (*Columba livia*), Quail (*Coturnix coturnix*), and House Sparrow (*Passer domesticus*) showed that half saturation pressures (P_{50}) of bird blood were similar to those of mammals. P_{50} decreases with increase of body size, e.g., it is 20.7 (mm Hg) for the Rhea, compared with 42 and 41 for the quail and the sparrow, respectively. The curve of dissociation data is similar to that of mammals.—Leon Kelso.

43. Dermal reception in birds. I. Morphological features and topographic distribution of sensory structures in bird skin. (Kozhnaya resteptsiya ptits. I. Morphologicheskaya kharakteristika i topographicheskoe raspredelenie sensornyky struktur v kozhe ptits.). T. Dmitrieva. 1974. *Biol. nauki,* **1974**(4): 22-23.
Dermal reception in birds. II. Functional features of sensory structures in bird skin. (Kozhnaya retseptsiya ptits. II. Funktsionnaya kharakteristika i sensornykh struktur v kozhe ptits.). T. Dmitrieva. *Ibid,* **1974**(7): 18-26. (In Russian.)—These literature reviews compare the tactile sensitivity of the skins of birds and mammals. A main conclusion is that in birds this property fully equals, if it does not exceed, that in mammals, as indicated by the results of the few studies made. The numerous published titles cited, about 90, deal largely with structure and cutaneous distribution of Gandry, Pacini, and other bodies but do not indicate their possible role in avian orientation or anting. Many of these studies have been reviewed in *Bird-Banding,* as significant as any perhaps being that of P. Dorward (Rev. *Bird,Banding,* **42**(1): 62, 1971). —Leon Kelso.

44. Skin lipids: their biochemical uniqueness. N. Nikolaides. 1974. *Science,* **186**: 19-26.—The ample description, discussion, and illustrations provide a convincing case for the uniqueness of skin lipids. Nevertheless the need for more penetrative research on the dermal biochemistry of birds beyond that on the preen gland seems evident.—Leon Kelso.

45. Olfaction in birds. (Obonyanie ptits.) N. Gurtova and V. Sadovnikov. 1974. *Ornitologiya,* **11**: 94-109. (In Russian.)—After noting that there is considerable disagreement among scientists on the acuity and function of odor perception in birds, the authors review the literature available to them (125 titles). There is analysis and discussion under the topics: Morphology of olfactory organs; Peripheric division; Central division; and Experimental investigations. The results of the latter are regarded as inconclusive, but recent papers on olfaction and pigeon orientation, particularly in Italy, by Papi and others, are not discussed.—Leon Kelso.

46. Respiratory heat and water exchange in Penguins. D. Murrich. 1973. *Respir. Physiol.,* **19**(3): 262-270.—At Palmer Station, Antarctic Peninsula, Adelie (*Pygoscelis adeliae*) and Gentoo penguins (*P. papua ellsworthii*) were available ad libitum for experiments showing that at air temperature of 5°C, the exhaled air was 9°, thus reclaiming 81.9% of water, and 83.4% of the heat added to the inhaled air during breathing. The heat recovered by air going through the nasal passages represents 17% of the simultaneous heat production. Penguins at air temperature of 5°C and subjected to "heat loads" increased the temperature of exhaled air to near that of the body and lost 39.1 cal/l of air, which equals 20.4% of their total metabolic heat production. The site of heat and water exchange is the common air space of the nasal passages. "Alpha-adrenergic neural activity modulating blood flow to the mucal lining of the nasal passages is postulated as the mechanism which permits heat and water exchange in cold conditions, and heat dissipation during heat loads."—Leon Kelso.

47. Growth and development of temperature regulation in nestling Cattle Egrets. J. W. Hudson, W. R. Dawson, and R. W. Hill. 1974. *Comp. Biochem. Physiol.,* **49A**: 717-741.—The authors studied the development of thermoregulation in nestling *Bubulcus ibis* in a colony in Galveston County, Texas, in 1967; the study was confined to the period of early growth (to 57% final weight) but within this limitation was particularly well documented. The weight-age data were said to fit a logistic equation better than a Gompertz or von Bertalanffy equation with a growth rate constant K (Ricklefs, *Ecology,* **48:** 978-983, 1967) of 0.232, but the scatter of the empirical data points was large so the reliability of this conclusion is not high: the estimate is, however, in line with Ricklefs' tabulation of rate constants for altricial species of this size (*Ibis,* **110:** 419-451, 1968) and is 2 to 3 times greater than the values for precocial birds of similar size. Nevertheless the ability to thermoregulate developed rapidly, with body temperature and metabolic rate varying linearly with ambient temperature only to age 4 days, the pattern thereafter resembling that of the adult. Shivering activity increased with age over much of the nestling period and weight-specific metabolism increased with weight, thus accounting for at least some of this change.

Nestlings of all ages showed highly developed capacities for heat dissipation at warm ambient temperrtures, in some cases dissipating heat at 2.5 times the endogenous rate of heat production. These capacities were correlated with increases in breathing rate and the initiation of gular fluttering, even among hatchlings, and thus correlate nicely with their need for heat defense in a subtropical climate.—Raymond J. O'Connor.

48. Composition of pigeon milk and its effect on growth in chicks. S. Hegde. 1973. *Indian J. Exp. Biol.,* **11**(3): 238-239. (In English.)—Chicks of domestic fowl (*Gallus* sp.) were fed 1 g each of pigeon milk as part of their daily ration for 4 weeks. Their weight 8 weeks later was above that of controls, 539 vs. 466 g. Compared with cow and human milk, it contained more protein (14.9%), fat (4.75%), and salts (1.03%), with vitamins A and C in traces; casein, lactose, and B_1 vitamins were absent while B2 was evident.—Leon Kelso.

49. Energy metabolism of the Raven. (Energetskii metabolizm Vorona, *Corvus corax corax.*) V. Dolnik. 1974. *Ekologiya,* **1974**(2): 56-62. (In Russian.) —This account is in the same pattern as several other studies by this author, with ample references to the work of Kendeigh. With increase in body weight in passerines, plumage quantity increases with feather elongation, whereas feather numbers increase on a ratio of 0.18. Feather weight for larger birds increases upward on a ratio of 0.82 instead of the expected 0.67, and feather length as a whole increases to a ratio of 0.936. Simultaneously feather density declines as body surface increases at a ratio of 0.667. By plumage adjustment larger birds may have a broader scope of heat control and thus afford tolerance to higher temperatures as observed in desert dwelling Ravens.—Leon Kelso.

50. Overnight torpidity in Australian arid country birds. N. Ives. 1973. *Emu,* **73:** 140.—Serventy (*Emu,* **70:** 27 and 201, 1970) and Congreve (*Emu,* **72:** 32, 1972) have previously discussed overnight torpidity, but the author suggests that the phenomenon occurs more commonly among Australian birds than previously suspected. Overnight torpidity was noted in young Crimson Chats (*Ephthianura tricolor*), adult Banded Whiteface (*Aphelocephala nigricincta*), adult Red-capped Robin (*Petroica goodenovii*), and adult White-fronted Honeyeater (*Phylidonyris albifrons*).—Edward H. Burtt, Jr.

51. Photoperiodic control of annual cycles in the Chaffinch, a temperate zone migrant. (Fotoperiodicheskie kontrol godovykh tsiklov u zyablika, migranta v predelakh umerennoi zony.) V. Dolnik and V. Gavrilov. 1972. *Z. zhurn.,* **51**(11): 1685-1696. (In Russian with English summary.)—Between January and March vernal premigratory fattening, nocturnal restlessness, and gonad growth can be induced experimentally in *Fringilla coelebs* by exposure to longer photoperiods. These diminish in time and photorefractoriness follows, a remote effect of early spring stimulation. Experiments showed that between May and September timing of the molt and fall migratory state do not depend on time and duration of photoperiods. However short periods accelerated early part of molt and long periods suppressed the later part of it. It is suggested that postnuptial molt and fall migratory state may represent an autonomous sequence of a free-running internal timer set in phase by vernal photoperiods. "A comparison in various experiments of the time intervals between some phases of the vernal photostimulation on one hand and timing of molt and fall migratory state on the other indicate that a free-running timer is induced after the end of the phase of unifactorial photoperiodic control of the vernal physiological state."—Leon Kelso.

MORPHOLOGY AND ANATOMY

(See also 43)

52. Some features of avian eye structure. (Nekotorye osobennosti stroeniya glaza ptits.) N. Kartashev. 1974. *Ornitologiya* **11**: 40-53. (In Russian.) —Purportedly a summary of modern anatomical knowledge to date of the most developed sense organ in birds. It is probably as inclusive as these pages could afford. Particularly stressed are details of the pecten which surprisingly in the Kiwi consists of but a protuberance or knob. Also numerous are facts and speculations on the foveae and adjacent areas, where visual cell density may range from 500,000 to 1,000,000 per mm^2. Most of the other information is available in the Van Tyne text.—Leon Kelso.

53. Eye color of female Lesser Scaup in relation to age. D. L. Trauger. 1974. *Auk*, **91**(2): 243-254.—A progressive change in the coloration of irides of female scaup (*Aythya affinis*) is discussed. Iris color was brown to olive yellow in all birds during their first year of life and was brown to yellow in birds through their second summer. All females in their third and fourth summers had olive-yellow or yellow irides. A color photograph is presented to show the comparative color of irides at different ages. The paper concludes with a brief but useful review of iris color change with age in other species.—Roger B. Clapp.

54. Analysis of structure and function of the sound transmission system of the middle ear of the Tawny Owl by simulation method. (Izuchenie stroeniya i funktsionirovaniya zvukoperedayushchei sistemy srednego ukha obyknovennoi neyastyi metodom modelirovaniya.) V. Anisimov. 1974. *Ornitologiya*, **11**: 76-87. (In Russian.)—Some years ago one might look through textbooks in vain for information or detailed illustrations on the osseous structures of birds' ears. At present much more is appearing, particularly on owls. Many details and diagrams of *Strix aluco* appear in this study, along with a reconstruction of the middle ear, built of plastic and rubber. Microscopic observation purports to show how sonar vibrational pressure operates on and through the columella into the inner ear. Among salient incidental facts: musculus tensor tympani is the sole muscle of the inner ear in birds; yet it is not homologous in origin to similar ear muscles in mammals. but rather to the stapedius muscle. All in all, structural details indicate ample adaptability of the columella and tympanum to multilateral sound perception.—Leon Kelso.

PLUMAGES AND MOLTS

(See also 49, 51)

55. Plumages of variable Oystercatchers. R. Stidolph. 1973. *Notornis*, **20**(4): 311-313.—According to 42 years' records, black individuals of *Haematopus unicolor* predominate on the east coast of North Island, New Zealand, whereas the variable (pied) is more numerous but not dominant on the west coast. Of 63 on the east coast 9 were intermediate or pied. On the west 74 were black, 52 intermediate, and 11 were pied. Of 50 of intermediate plumage from all areas, 26 were almost black, 11 more black than pied, and 2 with black rump and pied breast.—Leon Kelso.

56. Owl imprints on window panes. S. Wilton and A. Robinson. 1973. *Bird Study*, **20**(2): 143-144.—The impact of a flying Barn Owl (*Tyto alba*) on a window pane left an imprint (of wax or other lipid?) "so delicate and detailed that everyone who saw it was reminded of an exquisite Japanese etching. Every barb at the tip of its wings—and there were hundreds of them—could be counted, each a millimeter wide and a quarter of an inch long." ". . . [D]espite much rain on following days, the impression remained to be seen quite clearly for six weeks, when it was washed off by hand." Another instance raising the question: Is the imprint material a remnant of original feather formation or currently and continually produced by the feather? It deserves more biochemical study.—Leon Kelso.

ZOOGEOGRAPHY AND DISTRIBUTION

(See also 4, 64)

57. Origin of the highland avifauna of southern Venezuela. R. E. Cook. 1974. *Syst. Zool.*, **23**: 257-264.—Cook compares published material on southern Venezuelan avifaunas (largely that of Mayr and Phelps, *Bull. Amer. Mus. Nat. ist.*, **136**: 269-327, 1967) with hypotheses that the table mountain tepuis are islands colonized directly from the Andean highlands, or are refugia representing avifaunal responses to climate change in the Pleistocene. Regression analysis of number of species occurring on a tepuis on its area, elevation, and isolation from the Andes, and from other tepuis indicated that species diversity was (1) significantly related to elevation; (2) independent of tepuis area, and (3) positively, instead of negatively, related to isolation from the Andes. Tepuis faunas were thus derived in some other way than by direct colonization from the Andes, and the relation of number of species to elevation lends credence to a relation of fauna to past vegetational changes. One large, high altitude tepuis, Cerro de la Neblina, with a relatively depauperate fauna has evidently been colonized as an island, even during glacial maxima.

Most exciting in this paper is the comparison of tepuis avifauna with published data on Andean avifaunas from similar altitudes in Colombia (Miller, *Univ. Calif. Publ. Zool.*, **66**: 1-79, 1963) and Venezuela (Phelps, *Bol. Acad. Cien., Fis., Mat. Nat.* (Caracas), **26**: 7-43, 1968), which revealed that (1) oldest endemics on the tepuis are sub-oscines and (2) sub-oscines form a significantly larger proportion of the tepuis faunas than of the Andean faunas, thus indicating a lower extinction rate for these birds than for either non-passerines or oscines on tepuis. Why?—Paul B. Hamel.

58. The Lesser Black-backed Gull Larus fuscus in southern and central Africa. B. G. Donnelly. 1974. *Bull. Brit. Orn. Cl.*, **94**(2): 63-68.—The author provides a valuable review of the status of this palearctic species in central and southern Africa, discusses the ways in which *fuscus* may be distinguished from the similar *L. dominicanus*, and reassesses many records earlier attributed to *dominicanus*. There are now specimens, all immature birds, from Zambia, the Caprivi Strip, Rhodesia, and South Africa, and acceptable sight records from Malawi, Zambia, Botswana, Mocambique, Rhodesia, and South Africa. Both adults and immatures have been recorded in central and southern Africa in nearly every month of the year. It is suggested that many birds arrive in Africa in immature plumage and remain there until they "approach maturity." Because it may take as long as seven years for a gull to acquire fully adult plumage, the duration of stay of individual birds is not known. Although the origin of these southern African birds is unclear, it has been suggested that they may pertain to *L. f. antelius* or *L. f. fuscus*, races that breed in northern Eurasia. They are evidently not *L. f. graellsii*, the paler British race that winters in Africa only on the Atlantic coast.—John Farrand, Jr.

SYSTEMATICS AND PALEONTOLOGY

(See also 66)

59. Species limits and variation of the New World Green Herons *Butorides virescens* and Striated Herons *B. striatus*. R. B. Payne. 1974. *Bull. Brit. Orn. Cl.*, **94**(2): 81-88.—Variation among these herons indicates that *Butorides virescens* and *B. striatus* are conspecific. The species name for the combined forms is *Butorides striatus*. *Butorides sundevalli* of the Galapagos

Islands is probably a distinct subspecies of *Butorides striatus*.—M. Ralph Browning.

60. A new subspecies of *Accipiter tachiro*. M. Desfayes. 1974. *Bull. Brit. Orn. Cl.,* **94**(2): 69-71.—*Accipiter tachiro croizati* is described on the basis of two dark birds from the humid forest of Kaffa Province in western Ethiopia. The author has compared these birds to *A. t. unduliventer* of most of Ethiopia and the Boma Hills in Sudan, and to *A. t. sparsimfasciatus* of East Africa. Whereas the Ethiopian race *unduliventer* is widely agreed to be darker above and below than *sparsimfasciatus,* the author states that he is unable to detect this difference in his small series of these forms. He nevertheless proceeds to describe *croizati* as being darker, causing one to suspect that the Kaffa birds may be more typical of *unduliventer* than is his series of that form. In having large white tail spots the Kaffa birds differ from *sparsimfasciatus* and resemble *unduliventer,* with which they also agree in size and weight. A diagnostic character of *unduliventer* is the color of the thighs—clear (more or less unbarred) chestnut. The color of the thighs of the Kaffa birds is not clearly indicated. The Kaffa female is stated to have brown, not rufous, barring below; this character, however, appears to be variable in both *unduliventer* and *sparsimfasciatus.* The new race, if valid, seems no more than weakly differentiated from *unduliventer* and must have an unusually restricted range, adjoined on the east (Shoa) and immediately on the west (Boma Hills) by populations of that subspecies.—John Farrand, Jr.

61. *Buteo tachardus* Andrew Smith 1830. R. K. Brooke. 1974. *Bull. Brit. Orn. Cl.,* **94**(2): 59-62.—This long-overlooked name is revived for the African species presently bearing the well-known name *Butec oreophilus* Hartert and Neumann, 1914. Since Smith's name has priority over *oreophilus,* Brooke proposes that the name *tachardus* be used for the species. This reviewer believes, however, that the cause of nomenclatural stability is better served by considering *Buteo tachardus* A. Smith a *nomen oblitum,* and he is in the process of applying to the International Commission on Zoological Nomenclature for its suppression. —John Farrand, Jr.

62. Duetting in *Hypergerus atriceps* and its taxonomic relationship to *Eminia lepida*. L. G. Grimes. 1974. *Bull. Brit. Orn. Cl.,* **94**)3): 89-96. —*Hypergerus* is a monotypic West African passerine genus of unclear affinities. Because of certain resemblances to the problematical East African *Eminia lepida,* usually considered a sylviid, Chapin suggested a relationship between the two and placed them side by side in the Sylviidae. Some recent authors have followed suit, though without much conviction. Both species are now known to duet, and the present author compares their songs by means of spectograms and tables, finding a striking similarity in the female components, although the contributions of the males are quite different. He then reviews what is known of other aspects of the species' biology, noting among other things that both build a distinctive pendant nest with a side entrance and an overhanging portico. Whereas other similarities, such as the fact that the males are larger in both species and that both breed during the rainy season, do not seem very compelling, the author makes a good case for the notion that these birds are indeed related and suggests that they be placed in a single genus (*Hypergerus*). The resulting pattern of distribution, with one species north and west of the Congo Basin and the other to the east, is a familiar one in related but divergent species in Africa, and combining the species in one genus is consistent with a contemporary broader generic concept. The author does not address the remaining question of whether these birds are correctly placed in the Sylviidae.—John Farrand, Jr.

63. A new subspecies of *Acrocephalus baeticatus* from Lake Chad and a taxonomic reappraisal of *Acrocephalus dumetorum*. C. H. Fry, K. Williamson, and I. J. Ferguson-Lees. 1974. *Ibis,* **116**(3): 340-346.—*Acrocephalus baeticatus hopsoni* is described from specimens of the African Reed Warbler collected at Malamfatori on the Nigerian shore of Lake Chad. This and other similarly isolated populations of *baeticatus* in Senegal (Lake Guier), in Eritrea, and possibly at Tibesti are intermediate in color, measurements, and wing structure between the sub-Saharan races of *baeticatus* and Blyth's Reed Warbler (*Acrocephalus dumetorum*) of the Palearctic, with the specimens from Eritrea and Tibesti being barely distinguishable from the Eurasian bird. The authors refrain from applying their name *hopsoni* to the Senegal, Tibesti, and Eritrean populations on the grounds of their great isolation from one another and the fact that they grade imperceptibly into *dumetorum*. This leaves these birds without a name. They will eventually require a trinomial, and the best course may prove to be to call them *hopsoni*; the alternative, to name more subspecies, seems unattractive in view of their great similarity and of the fact that they admittedly form part of a cline. Because of the intermediacy of these birds the authors consider both *baeticatus* and *dumetorum* to constitute a single wide-ranging species taking the older name *baeticatus*. It is suggested that the large gap between the ranges of African and Eurasian forms of the species may result from the recent expansion of the Sahara, and attention is drawn in this connection to a number of other passerine species with similarly disjunct distributions. An alternative hypothesis, that the break in range is due to competition with the Olivaceous Warbler (*Hippolais pallida*) in the intervening regions, is considered and rejected.—John Farrand, Jr.

64. The relationships of the African sugarbirds (*Promerops*). C. G. Sibley and J. E. Ahlquist. 1974. *Ostrich*, **45:** 22-30.—The African genus *Pomerops* has long been a problematical one, and in recent years it has either been placed in a separate family of unknown affinities or else referred rather uneasily to the Meliphagidae. Using a refined electrophoretic technique, the present authors have found that the egg white and red blood cell proteins of *Promerops* bear little resemblance to those of the honeyeaters but are very similar to those of the starlings and of the African genera *Cinnyricinclus* and *Onychognathus* in particular. Having made this unexpected discovery, Sibley and Ahlquist survey the Sturnidae in search of other similarities to *Promerops*. Because *Promerops* is such a highly specialized nectar-feeder, and because the Sturnidae are somewhat difficult to define morphologically, the list of characters the two have in common is not very impressive. Some African starlings feed on nectar occasionally, though none shows any specialization in this direction. *Promerops* builds an open nest of twigs and grasses; *Onychognathus* builds an open nest of mud and all other starlings nest in holes or build domed nests. The highly modified bill of *Promerops* is thought not to disqualify it from membership in the Sturnidae because some starlings have bills that are equally modified, though in other directions. Male sugarbirds have strikingly modified outer primaries, emarginated on the outer webs and greatly broadened on the inner; these are compared with the rather modest notches in the primaries of some starlings. More convincing are the similarity in the distribution and amount of natal down in the two groups, and the fact that the syrinx of *Promerops* is very like that of the starlings. The main point of similarity between the sugarbirds and the honeyeaters has been that in both the tongue is modified for nectar-feeding. The authors observe that such modifications are found in no less than 12 oscine groups and have no doubt arisen independently several times. Because the tongues of *Promerops* and the Meliphagidae differ considerably in detail, such similarity as exists is judged to be the result of convergence. Sibley and Ahlquist propose that *Promerops* be transferred to the Sturnidae and recognize its high degree of specialization by erecting a monotypic subfamily— the Promeropinae.

Those who are skeptical about the electrophoretic method and who are unpersuaded by Sibley's past successes with it may find it difficult to accept the idea that *Promerops* is a starling. Yet most will agree that a relationship with the Sturnidae is more plausible than is one with the Meliphagidae, which are otherwise an exclusively Australo-Papuan family. A relationship with the Sturnidae is zoogeographically feasible and is supported by enough evidence in addition to the electrophoretic data that there seems little reason not to accept it. Evidence from protein electrophoresis is perhaps no more fundamental than that derived from the study of more conventional morphological characters. Its chief value has often been in pointing in a new direction and triggering a reappraisal of these conventional characters. In the present instance the result seems to be a solution to one of the most perplexing taxonomic problems among African birds.—John Farrand, Jr.

65. A new genus and species of bird from the island of Maui, Hawaii (Passeriformes: Drepanididae). T. L. C. Casey and J. D. Jacobi. 1974. *B. P. Bishop Mus., Occ. Papers,* **24**(12): 216-226.—With the extinction of many of the native Hawaiian Drepanididae it comes as a distinct surprise that two students have discovered a new genus and species. The new bird, *Melamprosops phaeosoma,* is described from two specimens taken 15 and 17 September 1973 in the Koolau Forest on the northeastern slopes of Haleakala Volcano. Notes on the morphology, insect eating habits, and call notes suggest that the bird belongs to the Psittirostrinae and is a specialized offshoot of the genus *Loxops*. The bird is uncommon and restricted to a very small area of forest on Maui and is proposed for inclusion on the U. S. Department of the Interior's List of Endangered Species. The holotype and paratype are located respectively in the Bernice P. Bishop Museum, Honolulu (No. BBM-X-147112), and in the American Museum of Natural History, New York (AMNH No. 810456).—Roger B. Clapp.

EVOLUTION AND GENETICS

(See also 18, 57, 63)

66. Geographical variation in iris color in the bulbul *Andropadus milanjensis.* R. J. Dowsett. 1974. *Bull. Brit. Orn. Cl.,* **94**(3): 102-104.—The author describes variation in iris color in the Stripe-cheeked Bulbul, a bird of East African montane forests, noting in particular that within the range of the race *olivaceiceps* in Malawi birds south of the Bua and Dwangwa river valleys have yellow or yellowish irides while to the north, in the Misuku Hills and on the Nyika Plateau, the irides are chestnut or umber. The author shows that these differences are neither sexual nor seasonal, and suggests a genetic basis. It appears to some extent at least that this variation is independent of the variation in plumage characters upon which races are presently based. Because the situation is unclear in other parts of the species range he refrains from proposing a name for the brown-eyed birds in what is presently the northern part of the range of *olivaceiceps*. The importance of this paper lies in the fact that it indicates that the Bua and Dwangwa river valleys may have formed a barrier to the dispersal and gene flow of montane species, as has already been shown for the Chire rift in southern Malawi.—John Farrand, Jr.

67. New records of hybrid birds in Croatia. D. Runcer. 1970. (English translation). *Larus,* **24:** 153-155.—A hybrid between *Carduelis chloris* and *C. carduelis* and a hybrid between *Fringilla coelebs* and *F. montifringilla* are described. Both hybrids are males and are specimens in the collection of the Biology Institute of Zagreb University, Yugoslavia.—M. Ralph Browning.

FOOD AND FEEDING

(See also 20, 25, 31, 32)

68. The relationship of hunger to predatory behaviour in hawks (*Falco sparverius* and *Buteo platypterus*). H. C. Mueller. 1973. *Anim. Behav.,* **21:** 513-520.—Basically, the two hawks kill only when they are hungry. This situation differs from those of excessive killing in other avian and some mammalian predators, and the author discusses the possible nature of the differences.—Jack P. Hailman.

69. The effect of digestion on the osteological composition of owl pellets. J. Raczynski and A. Ruprecht. 1974. *Acta ornithol.,* **14**(2): 25-38, (In English with Polish and Russian summaries.)—The question of the reliability of bone remnants in raptor pellets as an index of food eaten is attacked directly here, perhaps for the first time on an adequate scale. Three Long-eared (*Asio otus*), 4 Tawny (*Strix aluco*), and 5 Barn (*Tyto alba*) owls, in captivity, were supplied with rodents and House Sparrows, *ad libitum.* Careful records were kept of identity and amounts of animals ingested and of bony elements ejected. The discrepancy found between the items supplied as food and those found later in pellet remains is sufficiently large as to seriously affect the evaluation of owls' food habits under natural conditions. A significant proportion of bony tissue was disintegrated and passed through without a trace. For the Tawny Owl the missing skeletal elements comprised 51%; Long-eared Owl, 46%; and Barn Owl, 34%. For individual animal items the losses, supply vs. recovery, were correspondingly: 16%, 20%, and 8%. The authors found some correlation between the thoroughness of digestion and the age of the prey and the age of the owl. They declare that the mixing of one prey item in two successive pellets is a rarity, and not of consequence under field conditions, and that summarizing identifiable items from a general pellet collection leads to decided underestimation. This paper is a condensation of other information that is best considered directly.—Leon Kelso.

70. A vignette of the mammal population of Houat and Hoedic Islands. (Coup d l'oeil sur le peuplement mammalien des iles d'Houat et Hoedic (Morbihan)). P. Nicolau-Guillaumet. 1974. *Mammalia*, **38**(1): 147-149. (In French.)—The rodent population of two French coastal islets 5 km apart, each of about 200 hectares, is analyzed by comparing the contents of Barn Owl (*Tyto alba*) pellets. The quantity for analysis, 23 samples for the former islet and 40 for the latter, is sparse. The greatest difference is in common mouse (*Mus musculus*); 1% by pellet numerical count for the former, 29% on the latter place.—Leon Kelso.

71. *Anthurium* fruit as a food of White-bearded Manakins. R. Breitwisch and M. Pliske. 1974. *Ibis*, **116**: 365.—Unlike *M. manacus* in Trinidad, which Snow (*Zoologica*, 47: 65-104, 1962) suggested could not digest *Anthurium* fruits, *M. manacus* at Rio Palenque, Ecuador, primarily consumed the fruits of these climbing aroids during the January-February 1973 period of this study. This difference in behavior between conspecific populations suggests that wide variability in other behaviors may exist. Breitwisch and Pliske promise more on display behavior later.—Paul B. Hamel.

SONG AND VOCALIZATIONS

(See also 21, 27, 29, 62)

72. Vocal mimicry of the Paradise Whydahs (*Vidua*) and response of female whydahs to the songs of their hosts (*Pytilia*) and their mimics. R. B. Payne. 1973. *Anim. Behav.*, **21**: 762-771.—Two species of finch host occur widely in Africa, where they are broken up into populations some of which are geographically allopatric. The Paradise Whydah (*V. paradisaea*) is a nest-parasite on the Melba Finch (*P. melba*), and the male whydah sings a song mimicking the host's song. Captive female whydahs responded to either the host's song or that of their own males, but not to the song of *P. phoenicoptera*. Responses to songs of sympatric and allopatric hosts did not differ.—Jack P. Hailman.

73. The functions of advertising song in the Sedge Warbler (*Acrocephalus schoenobaenus*) and the Reed Warbler (*A. scirpaceus*). C. K. Catchpole. 1973. *Behaviour*, **46**: 300-320.—The study involved recording of songs under various conditions and playback experiments. Some highlights are that in the Sedge Warbler advertising song ceased completely after mating, and territorial defense was by visual displays, whereas in the Reed Warbler acoustic defense was continued after mating. The difference correlates with the habitat, Sedge Warblers living in more open areas.—Jack P. Hailman.

74. Effect of number, kind and order of song elements on playback responses of the Golden-winged Warbler. M. S. Ficken and R. W. Ficken. 1973. *Behaviour*, **46**: 114-128.—*Vermivora chrysoptera* has a song consisting of an introductory trill (Z-syllable) followed by several lower trills (B-syllables). In the first series of playbacks the normal ZBBB and the BBZBB songs received the greatest median responsiveness; BBBBZ was also high, but other artificial calls (Z, ZBB, ZBBBB, ZBBBBBB, and BBBB) elicited almost no response. In the second series, ZBBB and ZB were high, but others (ZZZ, BBZB, BBBZ, ZZZB, ZBBBZ and BZ) were generally ineffective. There are details of variation in calling, both naturally and in response to playbacks, too lengthy to summarize here, and a discussion of which variables in the song are species-specific, individual-specific, and which vary with the motivational state of the singer.—Jack P. Hailman.

PHOTOGRAPHY AND RECORDINGS

75. A discography of bird sound from the Nearctic region. J. Boswall and R. Kettle. 1974. *Recorded Sound,* **54:** 306-312.—This is the last of a series of papers that has catalogued recordings of bird sounds from around the world. Each entry includes the name of the recorder or compiler, the date of issue, whether on record or tape, the publisher, and the number of species recorded. If mammals, insects, or other animals are on the recording, the number of species in each group is noted. No less than 108 titles are listed, including records of human imitations of bird sounds, one of a singing canary and a whistling human with a violin and piano accompaniment, as well as recordings of wild birds.—Bertram G. Murray, Jr.

BOOKS AND MONOGRAPHS

76. Visible Bird Migration at Falsterbo, Sweden. S. Ulfstrand, G. Roos, T. Alerstam, and L. Osterdahl (eds.). 1974. *Var Fagelvarld,* Suppl. 8. 66SKr.—In a recent issue I reviewed Edelstam's "The Visible Migration of Birds at Ottenby, Sweden" (*Bird-Banding,* **45:** 290-291, 1974). Much of that review could be repeated for this sister volume describing 11 years (1949 to 1960, excluding 1951)of autumn observations at Sweden's southwesternmost extremity. During seven years observations were made simultaneously at the two stations, and some interesting comparisons should be possible.

Unlike the Ottenby volume, the data presented in this book consist of computer-printed tables. The data are in a more readily usable digital form, but no patterns can be discerned by cursory examination of the text. Furthermore, the numbers in the data tables are so small as to practically necessitate use of a reading glass, in spite of the fact that many of the tables cover only two-thirds of the page (the remainder being blank). I can see no use for a book such as this except as a source of data for statistical analysis. That being the case, the magnetic tapes from which the book was distilled might well constitute a preferable means of dispensing the information.

The types of data included in this volume are fewer than in the Ottenby book. First, there is a day-by-day summary of observation periods by 10-minute intervals for each year. From these figures, total observation time for any day, month, or year could be tallied. Next, daily totals for all species are listed for 1949, 1950, 1952, and 1953. For the remaining years, daily totals are given for only 18 species or species groups (e.g., *Fringilla coelebs* and *F. montifringilla*). The largest section of the book presents hour-by-hour counts for five-day periods for each of the years and for all years combined. Finally, annual totals are given for each species. In an introductory section, techniques used in collecting the data and biases are discussed. Notes on the occurrence, behavior, and identification problems associated with various groups of species are given, followed by a useful bibliography of publications on bird migration at Falsterbo.

We have here another book of data awaiting study. However, in this case we are promised (p. viii) that an analysis of the migration data in relation to weather factors is under way and will be published separately.—Kenneth P. Able.

77. Francis Lee Jaques/Artist of the Wilderness World. Florence Page Jaques. 1973. Garden City, New York, Doubleday & Co., Inc. 370 p. Many illustrations, sketches, scratchboard drawings, and both black-and-white and colored reproductions of Francis Lee Jaques' paintings. $25.00.—The book has contributions from articles by a number of contemporary artists, writers, and friends and a treasury of Jaques' own writings. A valuable contribution to readers today and in the future is the last part in the third paragraph of the biography, "Today, however, the name in England is pronounced 'Jakes.' Here it is 'Jack-quees,' as in *Who's Who* (or 'Jay-quis'). We say 'Jay-quees.' "

This book is more than a simple biography. It is the story of a wonderful love affair between two gifted, sensitive people and the great American wilderness—the vast plains of the western United States. the vibrant forest solitudes of the Great Lakes country, and the boundless vistas of our great continent. Future generations will be grateful to both Jaques for the portraits of our country in pictures and words that will live long after the developers, despoilers, and "human progress" have sent the models into oblivion.

No other American artist has mastered so well the techniques of painting the patterns of birds in flight across the heavens with clouds and light as a background. Very few have achieved wildlife as a part of the landscape as he has, and not just a landscape as a stage prop.

This book will be a joy to any zoologist and even the scientific nit-picker will forgive the few typos and date errors (we will all make errors in dates when we are octogenarians), and even the bat plate upside down. Railroad buffs will find Francis Lee Jaques' model railroad dioramas and his oils of railroading of great interest.—Elizabeth S. Austin.

78. **The World of the Wild Turkey.** James C. Lewis. 1973. Philadelphia, J. B. Lippincott Co. 158 p. $5.95.—This is a pleasant and factual book written to appeal to the general public. The views of turkey life are sugarcoated, but with enough meat to make Junior feel he is reading a scientific book. Most ornithologists will prefer Schorger's "The Wild Turkey" and will have read everything in James C. Lewis's bibliography and some things he does not list. —Elizabeth S. Austin.