

Correction of a report of a recovery of a Hermit Thrush — In recently perusing back issues of *Bird-Banding*, I came across an erroneous entry of one of my banded birds in an article by May Thacher Cooke, "Returns from Banded Birds: Some Interesting Recoveries" 16(1): 19, January 1945. In checking subsequent issues I was unable to find a correction so I feel this should be noted in this publication so researchers won't use this data as factual.

The reason for the delay in reporting this is twofold: (1) At the time of publication I was in the Army Air Force and was unaware, until recently, that it had been published; (2) It was not until after I had been released from military service that I had a chance to go over my records and enter recoveries that had been sent to me during the preceding four and a half years.

When this rather unusual record was noted a letter was sent to the Fish and Wildlife Service to verify its authenticity. (The original recovery report had stated that a Hermit Thrush (*Hylocichla guttata*), 38-177160 banded by me at Winter Park, Florida, on December 1, 1938, was shot at Edna, Jackson Co., Texas, February 1939. The unusual aspect of this recovery was that, theoretically, this bird had made an east to west migration of approximately a thousand miles in mid-winter. The Fish and Wildlife Service quickly acknowledged that the number was erroneously recorded at the bird-banding office and in fact was a White-throated Sparrow, 38-171160, banded at Hubbard Woods, Illinois.

Therefore, any researchers who might be using the data described above should delete it from their records. — Wallace N. MacBriar, Jr., Milwaukee Public Museum.

Wing Length of the Carolina Chickadee — In *Bird-Banding* 27: 32 (1956) I stated that the wing length of *Parus a. atricapillus* after at least one post-nuptial molt was about two millimeters longer than in first winter plumage and gave 65.3 ± 2.0 mm. as the adult wing length. Data on the population of *P. carolinensis* at Hillsboro, N.C., now allows a corresponding statement*. The chord is given.

Known immatures	26 birds; 56-62 mm; mean 59.8 ± 1.7
Known adults	12 birds; 57-63 mm; mean 60.7 ± 2.7

The four cases where first winter and adult lengths are available for the same bird agree in indicating a difference of about one millimeter. The population studied may prove to be intermediate between *P.c. carolinensis* and *P.c. extimus*. — Charles H. Blake, Museum of Comparative Zoology, Cambridge, Mass.

RECENT LITERATURE

BANDING

1. **Report on Bird-Ringing for 1960.** Robert Spencer. 1961. *British Birds*, 54 (Ringing Supplement): 449-495. In Great Britain 279,189 birds were ringed during 1960, 60,085 of them as chicks or nestlings. 7,911 birds were recovered. The six species ringed in the largest numbers were Blackbirds (*Turdus merula*) 22,216, Starlings (*Sturnus vulgaris*) 21,225, Blue Tits (*Parus caeruleus*) 17,209, House Sparrows (*Passer domesticus*) 16,737, Barn Swallows (*Hirundo rustica*) 13,374, and Sand Martins (Bank Swallow) (*Riparia riparia*) 13,192. During 1960 five papers were published each analysing ringing recoveries of a single species. Three other papers made use of the recoveries of the scheme. Four striking maps of recoveries in Europe, Asia and Africa are of great interest. An excellent innovation in this report is the notation at "the head of each species in the recovery section [of] the 'age' of the oldest bird recovered during the year." Like its predecessors this admirable report gives a maximum of significant information in a minimum of space; it well shows the enthusiasm and earnestness with which the British pursue the study of birds. — M. M. Nice.

2. **Recoveries in Great Britain and Ireland of Birds Ringed Abroad.** E. P. Leach. 1961. *British Birds*, 54 (Ringing Supplement): 495-508. In this "Selected List of Recoveries Reported" Miss Leach occasionally gives summarizing remarks. "Many Pink-footed Geese [*Anser arvensis brachyrhynchus*] marked in central Iceland by the 1951 and 1953 expeditions are still being shot in their winter-quarters" in Britain. As for the Black-headed Gulls (*Larus ridibundus*) that winter in Britain the "inland breeding-colonies of Czechoslovakia, southern Poland, Bavaria and Saxony are plentifully represented, and considerable numbers also come each year from Finland, the Baltic Republics, Scandinavia, the Netherlands and Belgium, as well

as from Northern Germany." An Oystercatcher (*Haematopus ostralegus*) ringed as a chick in the Netterlands June 6, 1929 was shot on January 1, 1957 at Pakefield, Suffolk 28½ years later. — M. M. Nice.

3. **Observations and banding at Ottenby Bird Station 1960.** Report No. 33. (Verksamheten vid Ottenby fågelstation 1960). Anna Tolstoy. 1961. *Vår Fågelvärld*, 20: 318-330. (English summary). The season, which lasted from 30 April to 31 October, was notable in many respects. A museum was built and equipped during the summer, partly to serve tourists with all pertinent information and, partly, to ensure continuous financial contributions to the station in the form of entrance fees.

The total number of birds banded, 14,992, was the second highest in the history of the station. Exceptionally high figures were obtained for the Buzzard (*Buteo buteo*) and the Rough-legged Buzzard (*Buteo lagopus*). An influx of Great Grey Shrikes (*Lanius excubitor*) allowed 59 of the species to be trapped, in comparison to the previous yearly record of 19.

The year brought 189 recoveries. Among these were three firsts for the station, a Buzzard, a Rough-legged Buzzard, and a Rook (*Corvus frugilegus*). Recovery contact was established with the bird station at Ledsjär on the mainland of central Sweden through three Dunlins (*Calidris alpina*), two banded at Ottenby and recovered at Ledsjär, the third banded at Ledsjär and recovered at Ottenby. A table on all the birds banded during the year and two recovery charts, one for the Turnstone (*Arenaria interpres*) and the other for the Common Sandpiper (*Tringa hypoleucos*), are included in the report, as usual one of outstanding achievement and value. — Louise de K. Lawrence.

MIGRATION

(See also numbers 42, 50)

4. **Bird casualties at a Leon County, Florida TV tower.** Herbert L. Stoddard, Sr. 1962. *Tall Timbers Research Station Bulletin* 1, 1-94 pp. The survey of bird casualties at the rurally situated Lake Iamonia television station (see *Bird-Banding*, 32(4): Review 35) has been, and continues to be, a fantastically dedicated undertaking, quite in a class by itself. At considerable personal cost, Stoddard converted the surrounding area into a carpet of closely cropped grass, smooth as a putting green, so that dead birds could be easily spotted from a cruising Volkswagen. He staked out carcasses of House Sparrows to measure the effects of predation and proceeded to minimize major sources — e.g., ants and earwigs by poison, Great Horned Owls by deportation. And from 1 October 1955 to 30 June 1961, he or his assistants patrolled the grounds every day, except for a few minor misses in June!

As a result of this unremitting effort, the Tall Timbers bulletin offers a greater variety of new information about nocturnal migration than almost any research report in recent memory. It demonstrates that migratory movement after dark takes place every month of the year and identifies no less than 129 species that participate at least occasionally. The list includes the Eastern Kingbird (*Tyrannus tyrannus*), Purple Martin (*Progne subis*), Mockingbird (*Mimus polyglottos*), Robin (*Turdus migratorius*), Red-winged Blackbird (*Agelaius phoeniceus*), and Brown-headed Cowbird (*Molothrus ater*) — species whose status even as partial night migrants has been subject to some doubt. Just as surprising is the showing of the Fringillidae, a group previously not very impressively represented in reported TV kills. The 1,911 casualties of birds of this family at Lake Iamonia amount to 13 percent of the grand total and involve 25 species, not including the Bobolink (*Dolichonyx oryzivorus*), which the report, in a moment of lapse, classes as a finch. Stoddard attributes the rarity of fringillids in pick-ups at other TV towers to their late migration, which reaches a peak in late October and early November, when most observers have stopped looking for casualties. After a night of heavy rain at the proper season, the kills usually consist mostly of finches. Such weather appears to ground most other passerines.

The continuous coverage at Lake Iamonia provides highly significant negative evidence. The data suggest, for example, that the Bluebird (*Sialia sialia*) is wholly a diurnal migrant and that shore birds are somehow largely able to avoid collision with the tower or its wires. Among the 21 shore birds killed, 15 were Common Snipe (*Capella gallinago*).

Stoddard generally maps the exact position where each dead bird is found. The daily plottings commonly show the recovery points massed on the downwind side of the tower. Stoddard's interpretation that most of the migrants were traveling with the wind is in line with certain other independent evidences. But on the night of 4-5 October 1957, when halation rings made direct observation possible, the birds were milling around and around the blinker lights. Under such circumstances their directions when they happened to strike the tower were probably random. After reflecting on the matter, one comes to realize that, even so, the vast majority of the casualties should have been *carried* downwind. Thus the location of a dead bird with relation to the obstruction that killed it is not necessarily a reliable key to its original flight direction.

One of the most intriguing features of the Lake Iamonia data is the ratio of spring mortality to autumn mortality. In general, the autumn kill is by far the higher. Stoddard discusses six reasons why just such a result is to be expected. The surprise comes when one calculates the ratios species by species. The reviewer has done so for 29 species of vireos, warblers, and tanagers that winter in northern Florida only casually if at all. For those that breed in Leon County, 39 percent of the casualties have been in spring. For those that do not nest there ("key" transients according to the terminology the reviewer has used in other connections), the corresponding figure is only 7 percent. Among the breeding birds, only one species has a spring percentage less than 28; among the transients, only the Cape May and Blackpoll Warblers have percentages greater than 28. Why the two groups differ in this way remains to be explained. Perhaps the breeding birds, which are nearer their destination when they reach the tower in spring, tend to fly lower at night than the transients. Perhaps the effect is due merely to the passing of the bulk of the nonbreeders late in the season, when the kind of weather that induces collision disasters is less frequent. — R. J. Newman

5. **Some physical limitations on migration.** W. B. Yapp. 1962. *Ibis*, 104 (1): 86-89. The Lake Iamonia TV tower also furnished most of the specimens for the four studies of fat reserves and flight ranges by Odum and various co-authors reviewed in the previous issue of *Bird-Banding*. Yapp takes exception to the conclusions in the first of these studies, the only one he cites in his present theoretic critique. He thinks that sustained migratory flight requires a far smaller expenditure of energy than Odum has assumed.

Yapp and Odum have approached the same problem differently. In a previous theoretic analysis (*Wilson Bulletin* 68(4): 317), using assumptions regarding wing beat, Yapp computed that the total loss of reserve lipids in flight should be of the order of 0.4 percent of body weight per hour. On this basis, a Scarlet Tanager (*Piranga olivacea*) with half its body weight migratory fat has enough lipid fuel for more than 125 hours of continuous air travel, or an advance exceeding 3750 miles at a mean ground speed of 30 mph. Recent estimates of Odum, Connell, and Stoddard (*Auk*, 78(4): 518) for the same species under similar conditions equate to 1780 miles. Yapp would attribute the huge discrepancy mainly to Odum's assumption that the energy demands of flight are six times those of the resting state — a ratio he considers wholly unrealistic. He believes that the data from Lake Iamonia confirm his view. Many individual migrants killed there enroute to tropical wintering grounds do not have enough fat reserves, according to Odum's calculations, to fly across the Gulf of Mexico. Yapp takes for granted that these birds would have continued on to a far destination without replenishing their fat stores, but this conclusion is not necessarily valid. Some of the birds that pass Lake Iamonia with low reserves are undoubtedly traveling around the Gulf; those that continue directly south have 50 miles in which to land and refuel before launching out over the water; and a good many trans-Gulf migrants do fall exhausted into the sea.

Yapp again suggests, as in 1956, that the need for water may impose more effective limits on the distance of nonstop flight than does the depletion of fuel. In the absence of contrary evidence, this idea seems not unreasonable, but data by which to evaluate it are almost nonexistent. — R. J. Newman

6. **Weight characteristics of birds killed in nocturnal migration.** Richard R. and Jean W. Graber. 1962. *Wilson Bulletin*, 74(1): 74-87. Ornithological literature contains several reports of birds migrating at night under solid cloud cover. The Grabers surmise that such a condition, though ill-suited for celestial navigation, might actually be optimal for migration. Their reasoning recalls the contentions of Yapp: they point out that overcast and high humidity are advantageous because

these factors reduce water loss in prolonged flight. This idea is only an incidental facet of the present paper, which is mainly a factual record of the organ weights of 125 Swainson's Thrushes (*Hylocichla ustulata*), 57 Gray-cheeked Thrushes (*Hylocichla minima*), and 287 other migrants killed at a TV tower in Illinois. Dissection revealed that heart and lung weights tended to vary only with gross weight. The brain averaged heavier in immatures than in adults and heavier in females than in males. The pectoral mass usually weighed more in adults than in immatures. Liver weights were greater in immatures than in adults, greater in males than in females.

The mortality on three nights contributed most of the material for the investigation. In the opinion of the authors, the hours when the collisions occurred were different on each of these occasions: all night long on 16-17 September, 1958, mostly between 0030 and 0200 on 29 September 1959, and mostly just before dawn on 20 September 1960. The basis for these conclusions was the coincidence of overcast and poor visibility with periods when an automatic recording device (see *Bird-Banding*, 32(4): Review 34) was registering large numbers of flight calls. On each successive occasion the average bird killed should have been on the wing longer at the time of death — approximately 6, 7, and 11 hours respectively. In line with expectation, the trend of the nightly average gross weight for Swainson's Thrush (largest sample) was progressively downward; but comparison of 1959 and 1960 values indicated a reduction of little more than 0.4 g/hr.

The 0.4 g/hr loss is 1.3 percent of gross weight, slightly more than three times the theoretic hourly decrease of lipids computed by Yapp. But there are two important facts to consider. On the one hand, the Graber figure represents not only the consumption of fat but also the evaporation of water. On the other, probability is strong that the reported weight difference is well on the low side of statistical accuracy. The 1959 mean almost certainly includes lighter-than-average thrushes killed after the peak hour. The 1960 mean incorporates heavier-than-average individuals that died before the predawn hour of the peak but no compensating light birds from the hours afterward, since collisions cease when the sun rises. Fat class ratings by the Grabers show a sharper decline than gross weights. This paradox merely proves that such ratings are not precise enough to provide much enlightenment in the present connection. — R. J. Newman.

7. Age variation and time of migration in Swainson's and Gray-cheeked Thrushes. Robert B. Payne. 1961. *Wilson Bulletin*, 73(4): 384-386. Thrushes made up the bulk of the casualties in another TV tower kill, one noted at Onondaga, Michigan, on 8 October 1959. The weather background and the lack of food in the gizzards of the victims convinced Payne that the main mortality took place in the hour before midnight. The large sample (172 individuals of the two species) provided an excellent test of the criteria for aging *Hylocichla*. The paper's conclusions in this regard should be studied by every bird bander.

Taken together, the four papers just reviewed reveal a problem and suggest an approach to a solution. The assumptions at present possible concerning energy requirements of migration are so flexible that different physiologists can make a case for radically different estimates of the distance a bird can travel in one flight. An empirical method of testing whose figures are more nearly right might be to determine the individual times of various TV tower disasters and to record the fat content of the victims. Payne has tried to do the former; the Grabers have attempted to do both. But in each case the hour of death was inferential and no actual fat extractions were carried out. In his Tall Timbers bulletin, Stoddard has vividly described a night at Lake Iamonia when he picked up large numbers of casualties as they fell. Such precisely timed material as this, if available again in the future and processed for the purpose, should yield good statistical insight regarding the hourly rate of fuel consumption. — R. J. Newman.

8. Sex counts of Blackbirds on passage. P. R. Evans. 1961. *British Birds*, 54(11/12): 431-432. Among 205 Blackbirds (*Turdus merula*) netted during a heavy landfall of migrants in early April on an islet near the Isle of Man, only about 29 percent were males. The data are evidence of differential seasonal timing of migration in the sexes. — R. J. Newman.

9. On the distribution and migration of *Locustella o. ochotensis*. Jicho Ishizawa. 1960. *Tori*, 15(75): 214-226. (In Japanese, with English summary.) Mid-dendorff's Grasshopper Warbler (*Locustella ochotensis*) breeds in eastern Siberia, Kamchatka, and the northernmost island of Japan. It winters in the Philippines, Borneo, and Celebes. Ishizawa bases his report concerning the migrations of this sylviid mainly on 131 specimens killed since 1924 at 17 lighthouses located from the Kuriles to Formosa.

Records are more numerous in the fall season of movement (late August into November) than in the spring season (May into June), suggestedly because of "the tripled post-breeding population" and the higher ratio of straying with young birds on the wing. The movement seems distinctly heavier on the side of the main Japanese island of Honshu facing the Asiatic mainland than on the Pacific side of the island. Of three suggested avenues of migration Ishizawa credits the most importance to a newly proposed one: the Philippines — Formosa — the China coast — South Korea — northern Kyushu. Reference to a globe will show that this is a rather roundabout itinerary that substitutes a 350-mile crossing of the Yellow Sea, with several changes of direction, for a 700-mile flight straight across the East China Sea. The views of Moreau regarding migration over the Mediterranean and Sahara, synopsized in the last issue of *Bird-Banding*, provide an interesting contrast.

At Cape Shiriya in extreme northern Honshu, males overwhelmingly predominated in early June; but by the end of the month the proportion was quite the opposite. In a reversal of Odum's findings with respect to migrants presumed to cross the Gulf of Mexico (see *Bird-Banding*, 33(2): Review 19), the autumn casualties in Japan, particularly among birds of the year, were leaner than those in spring. Gonadal development and fat deposition tended to be rather uniform among birds of a flock, but differed from flock to flock, irrespective of season. — R. J. Newman.

10. Concerning land birds on ships. Zur Frage: Landvögel auf Schiffen. Joachim Steinbacher. 1961. *Die Vogelwarte*, 21(2): 90-93. At the close of his paper discussed in this issue, W. B. Yapp asks what a migrant does first after a long journey — eats or drinks? If we could answer that question, we could better judge whether fuel consumption or water loss is the more effective factor limiting flight range. On land decisive observations are nearly impossible, but the chances of making them aboard ship seem better. Several items about to be reviewed prove the frequency of opportunity though they do not clarify the problem.

Steinbacher's theme is the increasing role ships are playing in the transoceanic transport of migratory land birds and perhaps in intercontinental range extensions. The speed of modern surface craft and the growing tendency of people aboard them to provide stray migrants with food are both factors that increase the likelihood of the birds' reaching port in a foreign continent alive. Though Steinbacher cites several accounts in English and German of long-continued systematic observations of land birds at sea, his major emphasis is on the partly unpublished findings of Erich Harken on the liners *Berlin* and *Bremen*. Harken has developed skill in caring for shipboard strays. Usually he has captured them and sent them to European aviaries. He has ventured generalizations about the appetite of migrants and may well have noted something about the comparative demands of thirst; but, if so, Steinbacher does not mention what.

An experiment worth trying might be to set up central feeding and watering stations on transatlantic vessels that carry people interested in birds. At such focal points, observers would be in the best position to determine whether newly arrived strays eat first or drink first. One difficulty might be that, as Harken's experiences forecast, insectivorous birds would not immediately accept food of the sorts that can be provided them on ship.

Among species recorded by Harken off Newfoundland were *Porzana carolina*, *Zenaidura macroura*, *Colaptes auratus*, *Dumetella carolinensis*, *Toxostoma rufum*, *Prothonotaria citrea*, *Dendroica tigrina*, *Dendroica caerulescens*, *Dendroica coronata*, *Agelaius phoeniceus*, *Icterus galbula*, *Molothrus ater*, *Spinus pinus*, *Pipilo erythrophthalmus*, *Junco hyemalis*, *Zonotrichia albicollis*, *Passerella iliaca*, *Zonotrichia leucophrys*, and *Plectrophenax nivalis*. According to Steinbacher, Harken furnished the National Audubon Society with a report on these observations, but this document cannot now be located. — R. J. Newman.

11. **White-throated Sparrow and American Robin crossing Atlantic on board ship.** A. L. Durand. 1961. *British Birds*, 54 (11/12): 439-440. A White-throated Sparrow (*Zonotrichia albicollis*) and a Robin (*Turdus migratorius*) found on the *Queen Elizabeth* in late April when the liner was 700 miles from New York stayed on board at least until the Isles of Scilly were reached. Durand suggests the sparrow may have remained longer and may have been the individual noted a few days later at Needs Oar Point in Britain, for the *Queen Elizabeth* must have passed within 6 miles of that locality. — R. J. Newman.

12. **What is a British bird?** Bruce Campbell. 1962. *British Birds*, 55 (2): 96. "What is the difference," asks this letter, ". . . between a bird that lands on a ship of its own accord and is then fed by passengers and one that is deliberately brought on board and then released?" The question is rhetorical — a way of expressing dissatisfaction with a 1956 recommendation of the British Records Subcommittee: "that the possibility of so-called 'assisted passage' should not necessarily deny to a bird the right of admittance to the British list," if the bird traveled in a "free state." — R. J. Newman.

13. **The day it rained birds on a U. S. Navy supply ship.** Cecil C. Abbott, Jr. 1962. *Audubon Magazine*, 64(1): 57. The "rain" came on a day in April, 400 miles east of Cape May, N. J., and 250 miles from Nantucket, the nearest land. It included "robins, song sparrows, cowbirds, mourning doves, rusty blackbirds and other species." Earlier, when the same ship was half way between the Azores and Ireland and 500 miles from the nearest land, the crew discovered a Wood Pigeon (*Columba palumbus*) perched in the rigging.

Omission of a few essential details divests the April observations of great potential significance. None of the species listed is a high-ranking long-distance migrant; none is even a clear example of a typical night migrant. One thus might infer that the incident demonstrates seaward drift in daylight, a phenomenon many migration students have considered unlikely. But, while the account seems to imply that the birds named made up the bulk of the flight, it nowhere actually says so. The investigator who seeks to elucidate unusual migration events in terms of patterns on weather maps even more quickly encounters an even more decisive obstacle. The time of day when the birds boarded the ship is unstated; so too is the date. Equally regrettable is the expression of the numbers of birds solely by figures of speech, without clues to the rough numerical equivalent, whether on the order of scores or hundreds or thousands of migrants. The report may be dealing with the greatest concentration of landbirds ever witnessed so far offshore on any of the major oceans of the world; but we may never know.

Abbott was writing for a popular nature magazine. The preceding paragraph is really no reproach to him. It merely avails itself of an opportunity to illustrate some of the ways in which good popular reporting may differ from adequate scientific reporting. A more explicit account of "the day it rained birds" should be welcomed by any of the editors of the more technical ornithological journals. — R. J. Newman.

14. **Records of Peregrine Falcons on the Atlantic Ocean.** K. H. Voous. 1961. *Ardea*, 49 (3/4): 176-177. The report gives three records, all in November, of *Falco peregrinus* lighting on ships far offshore in the Atlantic and Pacific and remaining for several days. Two of the birds subsisted on petrels, which they would bring back to the ship to devour. — R. J. Newman.

15. **Migrants in the northeast Atlantic.** Traekkende fugle i Nørdostatlantien. Ivor McLean and Kenneth Williamson. 1961. *Dansk Ornithologisk Forenings Tidsskrift*, 55(4): 209-211. (With English summary.) Migrants observed at a weather ship in the spring of 1957 included Black-headed Gulls (*Larus ridibundus*), presumptive Arctic Terns (*Sterna paradisica*), an Oystercatcher (*Haematopus ostralegus*), a Whimbrel (*Numenius phaeopus*), Dunlins (*Calidris alpina*), a Turnstone (*Arenaria interpres*), and a Wheatear (*Oenanthe oenanthe*). Autumn records added a Ruff (*Philomachus pugnax*), Purple Sandpipers (*Calidris maritima*), a Redshank (*Tringa totanus*), and a Lapland Longspur (*Calcarius lapponicus*), as well as more Oystercatchers, Turnstones, Dunlins, and Wheatears. The authors discuss the attendant weather patterns and make suggestions regarding the role of drift in various cases. — R. J. Newman.

16. **Blackcaps and Goldcrests in the Norwegian Sea.** Munk og fuglekonge i Norskhavet. A. Bernhoft-Osa. 1961. *Sterna*, 4(7):290. (With English summary.) In October 1959, personnel on a Norwegian weather ship recorded two Blackcaps (*Sylvia atricapilla*) and several Goldcrests (*Regulus regulus*). The vessel was stationed at latitude 60° N, longitude 02° E, 250 miles off the coast. — R. J. Newman.

17. **Swallow near Bear Island.** Oliver Hook. 1961. *Sterna*, 4(7): 285. A swallow (*Hirundo rustica*) that lit on a ship near midnight in mid-June in the seas north of Norway, 7 degrees above the Arctic Circle, provides a record that is highly unusual in several ways, even though the species has occurred casually on islands even farther north. — R. J. Newman.

18. **Migration across the southern North Sea studied by radar. Part 3: Movements in June and July.** David Lack. 1962. *Ibis*, 104: 74-85. In summertime and wintertime bird migration ebbs. Yet in these periods the moon-watcher sees occasional birds flashing across his field of vision, and the radar investigator still discovers "angels" of the type he has learned to associate with avian migration. At seasons when few kinds of migrants are on the wing, the opportunity is usually good to collate angel movements with ordinary field observations and thereby to associate radar echoes with particular species of birds.

By this means, Lack is able to reach several conclusions. The only prominent migration over the southern North Sea in June and July is a westward movement of Lapwings (*Vanellus vanellus*) that occurs primarily with winds between northwest and southeast. Other movements include: a small eastward emigration of unknown composition, chiefly with westerly winds; bigger southwest immigrations of Black-headed Gulls (*Larus ridibundus*) in late July; and small north-northwest arrivals, perhaps of Starlings (*Sturnus vulgaris*), in July. The tendency of migration to occur over the North Sea most heavily with following, or partially following, winds is a novelty. Previous radar studies there, at other seasons, have shown no clear connection between the density of migration and the direction of the wind.

Of more interest on a world-wide basis than the specific results reported in this paper is Lack's reassessment of the meaning of radar returns. He concurs with the reviewer that his density scale is not linear, that the volume of migration in his class 3, for example, averages much more than 3 times as great as the volume in his class 1. This effect is most pronounced at close range where the radar screen most quickly becomes saturated with returns. "For this reason, the density-scale was designed to take into account the echoes 40-70 miles away," which are sparser. Lack now believes that the thinning out of "angels" at this range is due to the disappearance of the lower birds below the radar horizon. — R. J. Newman.

19. **The migration of "angels".** W. H. Drury, Jr., I. C. T. Nisbet, and R. E. Richardson. 1961. *Natural History*, 70(8): 10-17. Although considerable work on migration in this country has employed radar, America has yet to produce a full-scale research report on the results in letter-press form. The present semipopular article is the nearest approach to such a report so far. It discusses at greater length, with a handsome pictorial accompaniment, conclusions previously outlined by Drury and already summarized in *Bird-Banding* (30(4): Review 8). It also states that between 10 and 50 times as many small birds migrate southwest over inland areas of Massachusetts in autumn as pass over Cape Cod, and that fast-moving "angels" representing shore birds on a nonstop flight to the Lesser Antilles and South America can be seen flying out to sea in the late afternoon. In conflict with the hypothesis of the Grabers (Review 3), the radar results have indicated that birds tend to avoid migrating when and where cloud cover is heavy.

The authors speak of a phenomenon analyzed by Lack: "as distance increases, progressively fewer birds are detected." Unlike Lack, they attribute the thinning out of echoes to a falling off of the radar's sensitivity at the longer ranges. Their belief, as a result of the comparative results they have obtained by moon watching, is "that, if the density is constant, the number of angels is roughly halved in each ten-mile step from the center" of the radar scope. Applying this principle, they multiply the number of angels counted in a given area by an appropriate correction factor. — R. J. Newman.

20. **Hawk migrations around the Great Lakes.** Sewall Pettingill. *Audubon Magazine*, 64(1): 44-45; 49. In its first appearance in the new year, Pettingill's regular column on *Bird Finding* turns to migration. It offers several generalizations: in fall, hawks migrate in the greatest numbers on the second day after cold fronts when there are steady northwest to west winds and ample sunlight; in spring, they tend to move during warm fronts when there are south to southwest winds and strong thermals; buteos, Rough-legged Hawks, and Marsh Hawks migrate around the Lakes; accipiters, eagles (buteonine though systematists consider them to be), and falcons sometimes take more direct routes. In line with its primary objective, the discussion tells how to reach time-tested vantage points for hawk-watching. Observers in Michigan should be stimulated by the question marks that ring their state on the attractive map depicting fall movements. — R. J. Newman.

21. **Hawk migrations around the Great Lakes.** Olin Sewall Pettingill, Jr. 1962. *Canadian Audubon*, 24(1): 15-17. This reference represents another printing of the article just reviewed. Only the layout differs. — R. J. Newman.

22. **Migration of Blue Jays at Madison, Wisconsin.** A. W. Schorger. 1961. *Wilson Bulletin*, 73(4): 393-394. Before flying northward across Lake Mendota on 24 April 1960, migrating Blue Jays (*Cyanocitta cristata*) circled so high into the sky that they became barely visible to the naked eye. Thus even a water crossing only of 1.7 miles may be sufficient to stimulate Blue Jays to fly at high altitude. — Robert J. Newman.

23. **Bird life in southwestern Puerto Rico I. Fall migration.** James B. McCandless. 1961. *Caribbean Journal of Science*, 1(1): 3-12. Southward migration from Florida through the West Indies to South America has been hypothesized for more than half a century. Records from the islands over the years have established the reality of such a flight, at least in token form, but have failed to demonstrate its quantitative importance. McCandless names ducks, shorebirds, and wood warblers as the most outstanding fall migrants precipitated in southwestern Puerto Rico. Yet among the warblers he characterizes only the Blackpoll as a common transient that does not winter.

The present account provides little support for the suggestion of Odum, Connell, and Stoddard (see *Bird-Banding*, 33(2): Review 19) that lean Red-eyed Vireos retrieved in northwest Florida were birds heading for a detour of the Gulf of Mexico by way of Florida and the West Indies. In his 10 years of experience, McCandless cites only one record of this species. He reiterates of fall migration in general: "The apparently obvious solution that the Antilles serve as stepping stones to South America . . . has not been proved. Evidence seems to indicate that many birds cross the Gulf of Mexico and the Caribbean in bold, over-water flights." — R. J. Newman.

NIDIFICATION

(See also nos. 25, 45)

24. **Postnatal Development in the Starling (*Sturnus vulgaris* L.) under Natural Conditions.** Karel Hudec. 1961. *Zoologické Listy*, 10(4): 305-330. A total of 125 nestling Starlings in 27 nests in Czechoslovakia were weighed and measured every day. Weight increased for the first 12 days, then remained stable till nest leaving at 22 days. Growth of bill and claws was continuous, that of tarsus and toes ceased by the 10th day. "The chicks of the second brood are smaller and lighter when they vacate the nest and the mortality after departure is higher among them, compared to chicks of the first brood." For this detailed study 13 tables and 11 graphs are provided. European literature on the subject appears to be well covered but it is a pity that Dr. Hudec missed Brina Kessel's intensive study on the breeding biology of this species (*American Midland Naturalist*, 1957, 58(2): 257-331.) — M. M. Nice.

BEHAVIOR

(See also no. 40)

25. **The Ecology of Blackbird (*Agelaius*) Social Systems.** Gordan H. Orians. 1961. *Ecological Monographs*, 31: 285-312. Contrasts between the Redwinged Blackbird (*Agelaius phoeniceus*) that breeds throughout most of temperate North America and the Tricolored Blackbird (*A. tricolor*) virtually restricted to the lowlands of California. The latter species is nomadic and highly gregarious at all times, the former is gregarious outside the breeding season. The male Redwing defends his

territory in central California from January to June; he is polygamous and seldom feeds his young in the nest. Tricolors, also polygamous, concentrate their breeding into a few weeks; they arrive in great flocks and begin to build at once; the females lay and incubate the eggs; both parents feed the young, flying to feeding grounds that may be 4 miles distant. The author believes that the Tricolored Blackbird evolved from the Redwinged Blackbird and their peculiar social system developed in response to locust plagues that must have occurred rather regularly before the coming of the white man. Their highly nomadic social system pre-adapted them to utilizing the agricultural lands of the present. — M. M. Nice.

26. Social Behavior of the Golden Sparrow. (Allgemeines und soziales Verhalten des Braunrückengoldsperrlings [*Passer (Auripasser) luteus* Licht.]) Peter Kunkel. 1961. *Zeitschrift für Tierpsychologie*, 18(4): 471-489. (English summary.) Golden sparrows come from the regions of the Upper Nile. The author watched 33 of these birds in an aviary and a room for 5 years; they bred for 4 generations and raised 35 clutches. No clear dominance was evident in the flock, but at the nest site the male dominates outside of the reproductive period, the female during it. The male brings sticks to form a shapeless mound in which the pair form the nest. Incubation by the female alone lasts 11 days. Both parents feed the young which fledge at 14 to 15 days. Behavior of this species much resembles that of the House Sparrow (*Passer domesticus*). — M. M. Nice.

27. Reactions of Turkeys to Flying Predators and Experiments on the Analysis of the Innate Releasing Mechanism. (Reaktionen von Truthühnern auf fliegende Raubvögel und Versuche zur Analyse ihre AAM's.) Wolfgang M. Schleidt. 1961. *Zeitschrift zur Tierpsychologie*, 18(5): 535-560. (With English summary.) This careful, detailed study, carried out at Konrad Lorenz's station at Seewiesen bei Starnberg (Obb.), Germany, investigates Lorenz's (1939) and Tinbergen's (1939) work in which they found young geese reacted to short-necked models passing over them, but ignored long-necked models. The author mentions a number of similar studies done under strict laboratory conditions but ignoring biological situations, for they all presented the stimuli so often that the subjects soon became habituated to them. In his own experiments the author found relative speed important "(optimum at about 5-10 times the diameter per second)", as well as size, but not the short or long neck figuration. Infrequently shown models invoked the strongest reactions. The author concludes: "As the experimental animals of Lorenz and Tinbergen had more often seen flying ducks and geese than birds of prey prior to the model experiments, the resultant intensity of reactions to 'short-neck' models can be explained by the fact that the animals had previously become adapted to 'long necks'." — M. M. Nice.

28. Further Observations on Foot-movements in Plovers and Other Birds. K. E. L. Simmons. 1961. *British Birds*, 54(11-12): "Foot-trembling" by waders and a passerine, and "foot-paddling" by various birds are briefly described. Thirteen references are cited. — M. M. Nice.

CONSERVATION

(See also nos. 45, 46)

29. Man, the Destroying Biotype. Raymond Boullenne. 1962. *Science*, 135(3505): 706-712. A very important paper by the director of the Botanical Institute and Garden, University of Liège, Belgium. At present "two-thirds of the human race have not enough to eat, and this situation is getting worse each day, as 120,000 new beings a day are born." The author describes the degradation by man's activities of much of the earth and states that the area of cultivable lands "has decreased by 20 per cent in the last hundred years. Of the 40 billion acres remaining today, at least 20 million disappear irretrievably each year." He tells of the delicate balance between the tropical forest and its soil; it takes 1,000 years to form 2 to 3 centimeters of humus, and the land is ruined a few years after the cutting of the forest. The last part of the paper describes the wonderful flora and fauna of the Albert National Park and closes with the hope that these great values will not be destroyed by the new leaders of the region. — M. M. Nice..

30. Antarctic Conservation. Robert Cushman Murphy. 1962. *Science*, 135(3499): 194-197. An eloquent warning of the dangers of disturbing, contaminating, and meddling with the wildlife of Antarctica. Dr. Murphy describes the

havoc wrought on islands near the Antarctic, concluding that man "seems to be the sole insatiable predator, because, unlike lower animals, he takes his prey from motives other than personal survival." He points out: "To make a moral issue of clubbing skuas and smashing their eggs is of no benefit to the penguins or to anything else. . . . We are all down there to learn the ways of nature, not to reform them." After telling of the survival for months of three lost huskies, he writes, "It is horrible and not altogether chimerical to picture wild dogs surviving on a winter diet of emperor penguins and a summer diet of Adélie's, as long as the birds last." We can only hope that the time will speedily come when the Antarctic is declared "an international park or sanctuary." — M. M. Nice.

31. Some Effects of Insecticides on Terrestrial Birdlife in the Middle West. 1961. Joseph J. Hickey. *Wilson Bulletin*, 73(4): 398-424. This ecological review is a contribution from the Wilson Ornithological Society Conservation Committee. Large scale insect control in orchards is potentially hazardous to wild life. Forest insects in general seem to be controlled with little or no apparent loss of bird life. The use of DDT should be vigorously condemned in attempts to control Dutch elm disease, because of its lethal effects on Robins and other birds; Methoxy-chlor is recommended as a substitute as it "has a very low toxicity to warm-blooded animals." The fire-ant program will long remain a classic example of how an insect problem can be mishandled at the administrative level. "Reproductive failures in Woodcock and Wild Turkey are now reported to be associated with use of insecticides in New Brunswick [spruce budworm spraying] and the South" [fire-ant campaign]. This comprehensive, objective review is documented with a bibliography six pages in length. — M. M. Nice.

32. Mass Insect Control Programs: Four Case Histories. William L. Brown, Jr. 1961. *Psyche*, 68(2-3): 75-111. Histories are given of the campaigns against the gypsy moth, imported fire ants, Mediterranean fruit fly and screw worm. The last two are "shining examples of the results of real thinking and hard work . . . of new approaches and a sound knowledge of the pest to be dealt with." The gypsy moth campaign has a long history and at present "the research program is expanding and striking out in new directions." In contrast to these, the "fire-ant mass spraying program began full blast in the fall of 1957. Considering the very high potency of the poisons used and the great areas over which they were to be sprayed, the research background of the fire-ant program was so sketchy as to be virtually non-existent." Despite the fact that fire-ant crop damage had "dwindled to practically nothing by 1957," despite the high losses of wildlife reported, and despite excellent research on promising baiting methods in Alabama and Louisiana, the spraying still goes on — at reduced dosages, to be sure— but supported by 2.4 million dollars annually from Congress. This authoritative report concludes with a warning against mass broadcasting of non-selective poisons and an urgent plea for adequately financed research on insect pests. — M. M. Nice.

33. Heritage Destroyed. The Crisis in Scenery Preservation in New Zealand. J. T. Salmon. 1960. Wellington, N.Z. A. H. and A. W. Reed. 100 pp. "New Zealand countryside is being bulldozed, concreted, dammed, power-poled, and eroded away — all in the course of a single generation." This is an eloquent indictment of the appalling destruction of great scenic values in this unique country. The author recites and illustrates the damage to soils and forests by introduced grazing animals — opossums, deer, sheep, and cattle —, "by unrestricted sawmilling of protection forests in mountain regions." The most recent disaster is the tampering with lake levels for hydro-electric purposes. Dr. Salmon calls upon his fellow citizens to awake, to set up a Nature Conservancy as the British have done, to get "preservation in perpetuity" into their laws and to save what they can of New Zealand's magnificent natural beauty. — M. M. Nice.

34. Forests and animals. (Skogar och djur.) Kai Curry-Lindahl. 1961. *Svenska Turistföreningens* Publ. No. 1556, 160 pp. Despite all its cultivation, Sweden is predominantly a land of evergreen forest. Its fauna is therefore also predominantly that of the forest, and dependent upon trees for cover, shelter, sustenance, and the conditions best suited for propagation. From the beech forests in the south to the unique dwarf-birch belts of the north at the limit of the tree growth on the rough alpine mountain plateaus, this book meanders knowledgeably through every characteristic region. We not only find out what kind of particular area we are

visiting at the moment, but how it evolved and developed, and why some sections remain relics but slightly changed from past ages. The author also suggests what economic and aesthetic values to set on particular forms of landscape harboring specific forms of life, and in what ways, by what means, and for what reasons they ought to be protected and preserved. He writes with an objective authenticity that is the prerogative of every far-sighted and imaginative conservationist. The foreign tourist and would-be explorer of these northern parts of Europe need not feel greatly hampered by not understanding the Swedish text. The collection of often superb photographs that generously illustrate every page of this outstanding publication of the Swedish Tourist and Travel Society will easily guide him to the most interesting places. — Louise de K. Lawrence.

35. Unrestricted exploitation versus comprehensive planning. (Ohämrad exploatering eller allsidig planering.) Gösta Walin. 1961. *Sveriges Natur Year Book 1961*, pp. 7-17. Hardly a spot remains upon the earth where the "heart-breaking beauty of nature," of which Robinson Jeffers spoke with such bitter eloquence, is not being threatened by total ruin from short-sighted exploitation for cheap returns. In Sweden the regulating of the water-levels by the state itself in order to obtain hydro power constitutes the gravest menace at present to regions of unique scientific, aesthetic, and recreational value. This article is a pithy protest against undertakings of this kind without adequate planning that takes into account all interests involved.

With eloquence the author brings out such reasons for greater discrimination as the constantly increasing economical importance of the idealistic values and the fact that hydro power can no longer cover increased consumer needs. The time is due to turn to other power-producing means and, indeed, these means are now rapidly being developed. Senseless and unnecessary exploitation must be stopped and, while initially some economical sacrifice may be involved, stinginess and tardiness with regard to conservation avenge themselves always. Necessary thoughtfulness demands that we do not turn our backs upon great future benefits simply because their time is not yet fully ripe. How often are we to hear such words and not heed them? — Louise de K. Lawrence.

36. The exploitation of the waters. (Exploateringen av vattnen.) Gunnar Rasmusson. 1961. *Sveriges Natur Year Book 1961*, pp. 29-40. (English summary.) The map that accompanies this factual review of the development of hydro-power in Sweden shows that only a very few of Sweden's lakes and rivers have hitherto escaped being harnessed to create electricity. Done gradually without overall long-sighted planning, the exploitation began with small power stations that soon became inadequate and were replaced by larger ones using ever greater amounts of the water resources. The result is now being felt with a sharply developing insufficiency of hydro-power for present day consumption and nothing but the most insignificant waters left to exploit.

Meanwhile, this exploitation has acted as a gigantic boomerang. It was accompanied by severe changes in the landscape as it became bereft of its all but irreplaceable natural water systems. This in turn brought with it largely unexpected but profound deficiencies touching upon almost every phase of human life. The most ominous was the resulting deterioration of the earth's cover, particularly the forests, followed by the pollution of the waters. All these are tragically familiar phenomena of the haphazard and unbalanced use and misuse of the earth's bountiful fruits forced upon human beings by the insidious effects of too rapidly increasing populations, a situation often and consistently repeated by succeeding civilizations throughout the history of mankind. — Louise de K. Lawrence.

37. A year in Sweden. (Ett år i Sverige.) Paul L. Errington. 1960. *Sveriges Natur Year Book 1960*, pp. 170-183. This is an excerpt from the author's report after a year in Sweden where he spent the time lecturing at universities and studying mammals, ecology, wildlife management, and conservation. The article is objectively and penetratingly written and by no means spares the subject. Among other things, Errington found the country poor in wildlife by comparison with North America, not surprising when the relative size of the land, its density of population, and its use developed not in the course of hundreds but of thousands of years are considered. What disturbed him most was the pronounced and unreasoning intolerance (which, alas, is not a myth) against those forms of wildlife that do or do not

actually interfere with the activities of the hunter, fisherman, forester, and the rest. He quotes a Swedish official as saying that Sweden cannot consider itself civilized until the last bear is exterminated.

Nevertheless, Errington found a strong core of energetic and dedicated naturalists constantly fighting adverse interests, ignorance, and indifference with respect to nature's values and cites as an example P. O. Swanberg's valiant battle for the restoration of Hornborgasjön. Perhaps after all, there as well as here, the individual human being's deep-seated reciprocity with nature is not so tragically lacking as it may seem. Perhaps it is only being suppressed, there as over here, by the effects of the particular phase of population dynamics that humanity is experiencing today. It is, however, significant and rather characteristic of the Swedes to accept such outspoken criticism by including it at the end of a publication of this kind. For this year book is essentially a contradiction to Errington's report, filled as it is with articles on the islands and famous skerries of Sweden from north to south and east to west, written with a great awareness of the value of their unique fauna and flora. At the same time as the book perceptively analyses the increasing threat posed by man's thoughtless, selfish, and nearly always devastating encroachment, it pleads for the preservation of these particular gems of nature and devises such action with the inspired eloquence of literary artistry, knowledge, and love.—Louise de K. Lawrence.

MORPHOLOGY AND ANATOMY

38. **Birds with Abnormal Bills.** D. E. Pomeroy. 1962. *British Birds*, 55 (2): 49-72. An extensive survey, based on an enquiry and on published records. Table 2 lists the number of birds with deformed bills found in 23 samples of banded birds ranging from 100 to over 3,000 individuals of each species. None were found in 5,000 non-passerines, 60 in some 20,000 passerines, a percentage of about 0.32. A surprising number of birds thus affected are able to survive in the wild, most of them having learned to feed in abnormal ways. Some of them suffer from heavy infestations of Mallophaga, and this is true of Crossbills (*Loxia curvirostra*) with their normally crossed bills. Ten deformed bills are illustrated in this interesting paper. — M. M. Nice.

PHYSIOLOGY AND PSYCHOLOGY

(See also nos. 5, 6)

39. **The Site and Nature of Provitamin D in Birds.** Hans R. Rosenberg. 1953. *Archives of Biochemistry and Biophysics*, 42 (1): 7-11. In 1928 H-C. Hou (Studies in the Glandula Uropygialis of Birds. *Chinese Journal of Physiology*, 2: 345-380) stated that the secretion of the preen gland contains ergosterol, which changes into vitamin D in sunlight on the feathers and is then swallowed by the birds during preening. The results in these and later papers (from 1929 to 1934) have been widely quoted and accepted by ornithologists both in the Old and New Worlds. The claims of Hou, however, have been convincingly disproved by Rosenberg who found after many experiments that the preen glands of ducks, geese and chickens contained no provitamin D. "A study of the distribution of provitamin D in the body of chickens revealed a high concentration in the sterols of the feet." "A sample of provitamin D from chicken feet was converted by ultraviolet light into vitamin D. Biological evaluation of this vitamin indicated a high activity for chicks, approximately equal to the activity of vitamin D₃." — M. M. Nice.

FAUNISTICS

40. **A Study of Suburban Bird-Life at Dollis Hill.** Eric Simms. 1962. *British Birds*, 55(1): 1-36. Very interesting study of bird life on a 546 acre tract in northwest London. It is based on intensive observations from January 1951 to the summer of 1961, "as well as on spasmodic observations from August 1943 to December 1950." Five main habitats are described and summaries given of the species occurring in each. These habitats are: residential area (60%); factory area (15%); parkland (13%); allotments (10%); and "special area" (2%). The "average number of breeding species each year from 1951 to 1961 was 21; and . . . the total population of breeding pairs of all species in 1961 was about 1,500, a density of 52-53 birds per ten acres." This figure includes Feral Pigeons. Song and song posts, winter populations, roosts, height of nests and other subjects are discussed. Man's effect on birds in the district has been almost wholly beneficial of recent years. "The cat is by far the more important enemy of birds in the district." This animal has recently lost ground in Dollis Hill as a household pet. "This

decrease is not reflected in any changes in the avian breeding population, however, since the limiting factor on the total number of breeding birds is clearly the availability of nesting sites." — M. M. Nice.

41. **Some Photographic Studies of the Swift.** Photographs by Arthur Brook, C. C. Doncaster, C. Eric Palmer and H. N. Southern. 1962. *British Birds*, 55(2): 72-74. Fourteen notable photographs of *Apus apus*. They show the birds approaching the nests with throats swollen with food-balls containing 300 to 1,000 small insects and spiders, parents feeding tiny and large young, courtship preening by 1-year-old pairs that build nests but do not lay eggs, and finally of a "screaming party" of Swifts — a group dashing by on a warm summer evening. — M. M. Nice.

42. **Data on wintering Bramblings.** (Einige Feststellungen an über winternden Bergfinken [*Fringilla montifringilla*].) Gerhard Creutz. 1961. *Vår Fågelvärld*, 20: 302-318. (From the Swedish summary.) This study is based on data gathered from 395 Bramblings banded 1955-1959 at Neschwitz in East Saxonia, Germany. These birds comprised 231 adults and 164 juveniles; 217 were males, 133 females, and 45 of undetermined sex. The predominance of the males is attributed to the tendency of the females to migrate farther south, as is also the case with the Chaffinch (*Fringilla coelebs*). The average wing-length of the males was longer than that of the females, and adults were heavier than juveniles. The seasonal weight curves established a peak during January and February, corresponding to a similar seasonal pattern found in some wintering North American birds.

A number of the Bramblings were kept in cages and released late in May and in the beginning of June. In 1956 all the birds disappeared, in 1958 one female was last seen 22 June, but in 1959 several of the released finches remained in the area throughout the summer, although no proof of nesting was established. — Louise de K. Lawrence.

43. **Bird observations in Norra Finnskoga.** (Ornitologiska iakttagelser i Norra Finnskoga, Värmland.) Björn Ehrenroth. 1961. *Vår Fågelvärld*, 20: 273-281. (English summary.) The region of Norra Finnskoga, though it covers the northernmost tip of Värmland province whose western border is part of the international boundary between Sweden and Norway, nevertheless does not belong to the northern but central Sweden. The thickly forested area is traversed by the river Klarälven from northwest to southeast. As so many other river valleys, Klarälvsdalen is an important route through which birds of distinctly southern distribution have penetrated northwards. Apart from the characteristically northern species occurring in a wilderness of this kind, the author's most notable and unexpected find was a group of six to eight Arctic Warblers (*Phylloscopus borealis*) observed feeding and singing from 29 to 31 July rather far south of their usual range in the Lapland highlands. — Louise de K. Lawrence.

44. **Sarek.** (Sarek.) Kai Curry-Lindahl. 1961. *Kungl. Domänstyrelsen, Raben och Sjögren*, 4: 1-56. This is the last in a series of descriptive and well-illustrated publications on Sweden's national parks. Sarek, situated above the Arctic Circle, Lat. 67° to 67° 30' N. is the largest of these parks. It includes some of the highest peaks and plateaus of the Scandinavian mountain range and covers the most rugged, practically untrodden wilderness areas in the country. Ninety-six glaciers are located within its boundaries.

Two factors have significant influence upon the fauna and flora of the region. First, these highlands form a divisional wall between two climates, the continental to the east and the maritime to the west. The Sarek, exactly on this line, therefore experiences highly variable weather conditions. Secondly, the vertical temperature differences are so sharp that the difference between the July means of the coniferous and the birch tree limits, only 900 feet apart, is greater than the divergence of the July means of Scania in the south of Sweden and the northernmost end of the Sea of Bothnia in the north.

Twenty mammals and 108 birds have been listed for the area. Despite considerable scientific activity during the past century and a half, the keen naturalist may find much still to be discovered in this virgin section of Lapland. — Louise de K. Lawrence.

45. **Birds of the streams.** Forsarnas fåglar.) Sten Svensson. 1961. *Sveriges Natur Year Book 1961*, pp. 122-131. Three species belong to this category of birds: the Grey Wagtail (*Motacilla cinereus*), the Kingfisher (*Alcedo atthis*), and the Dipper (*Cinclus cinclus*). Of these the first is a true migrant, the second partially so, but the Dipper remains at the stream where it nested during the summer in some water-sprayed nook, provided it can find open water that never freezes. The proximity of water appears to be a condition for the nesting of the Grey Wagtail. Originally it built its nests on the shelves of the rocks alongside the stream. Later it accepted the niches in the ancient stone bridges as nesting sites. But as these bridges crumbled and were replaced by cement structures which lacked recesses for holding a nest, this wagtail became rare. Yet signs of a developing ability to adjust to the new situation were observed during a recent year of peak population when one pair was found nesting inland at a distance of almost 200 feet from the water on the cliff of a ravine. The greatest threat, however, to the survival of all these birds is the pollution of rivers and streams — Louise de K. Lawrence.

46. **The Whooper Swans at Lake Draven.** (Sångsvanarna vid Draven.) Edward Wibeck. 1961. *Sveriges Natur Year Book 1961*, pp. 148-165. The Whooper Swan (*Cygnus cygnus*) is an Arctic species that nests in a constricted area of the Lapland alpine plateau as well as in Iceland and in northernmost Russia. In 1890 pieces of a Whooper Swan egg dating from the late glacial age were unearthed in southern Scania. This find is considered to be certain proof that the species at one time nested on a broad front just south of the receding land ice. This has become of special interest since a pair of Whooper Swans recently halted in migration at Lake Draven in Småland, some 200 miles north of the egg find, and nested there in four consecutive years.

The first year 6 eggs were laid from which 5 young survived. The next year 3 young hatched from 4 eggs. On the opening day of the duck hunting season, however, tragedy befell this brood when the parents panicked from the sound of shooting and departed to another lake. As the well-grown but still flightless cygnets attempted to follow on foot all succumbed; one was killed by a passing train. In the two last years, on the other hand, cygnets hatched and survived, six in 1961. The swans showed a rather remarkable tendency to lay their eggs earlier from year to year. Thus, over the 4 years their egg-laying period was advanced from late May to the middle of April. — Louise de K. Lawrence.

47. **Lemming year in the Lapland highlands.** (Lämmelår i fjällen.) Kai Curry-Lindahl. 1960. *Sveriges Natur*, 6: 203-207. Although the usual 3-year cycles were fairly regularly maintained by insignificant and rather localized population peaks, 18 years elapsed between the most recent maximum lemming year and that which occurred in 1960. From May to August the author worked through a territory stretching from the Arctic Sea to Jämtland in the south of northern Sweden.

The lemmings began moving after the first litters were born under the snow. Some moved into the forest, others remained on the plateaus. Great mobility characterized the lemming population during June and July. However, this should not be confused with what is usually meant by a lemming migration. These occur in concentrated form only in certain situations when, for example, a coast-line halts the advance of a slow movement or the lemmings find themselves trapped by two converging arms of a river. On such occasions certain panic-like reactions are released in the local overpopulation, that take expression in these frantic marches. Contrary to popular belief, the productivity of this rodent is not particularly great. Only the litters born in May reach reproductive age in the same year. Therefore a certain amount of time is required before the animal can build up an "explosion-capable" population.

The decline from the peak occurs surprisingly quickly, sometimes in the course of a few weeks. Epidemics but not physiological changes as a factor in this decline has been proved. The concentration of predators is another. Among these the birds, shrikes, owls, hawks, and skuas, play an important role. Their ability to increase their own rate of propagation as a temporary response to an abundant food supply is well known. — Louise de K. Lawrence.

SONG

48. **Songs of North American *Myiarchus*.** L. Irby Davis. 1961. *The Texas Journal of Science*, 13(3): 327-344. Detailed descriptions of the songs of all the species of crested flycatchers in North America. Two spectrograms are given for the Great Crested Flycatcher (*Myiarchus crinitus*), while 43 spectrograms are devoted to the songs of 7 other species. "The song patterns suggest evolutionary divergence through two different sub-groups — one composed of *tyrannulus* and two branches, *crinitus* and *cinerescens*; the other of *tuberculifer*, *yucatanensis* and the less closely connected *ferox*. In addition there is *nuttingi* which may be intermediate between *tyrannulus* and *tuberculifer*, and also *pertinax* which is indicated to be intermediate between *tyrannulus* and *cinerescens*. — M. M. Nice.

49. **The Vocabulary of the Great Tit.** Terry Gompertz. 1961. *British Birds*, 54(10): 369-394; (11-12): 409-418. An intensive study of *Parus major* pursued for 4 years. Tape recordings were made of calls and songs of hand-reared individuals (free-flying in an aviary and a house) and of color-ringed wild birds. Some of the calls and the full song repertoires of two males are presented in spectrograms. The Great Tit, especially the male, "goes about its daily round in a nearly continuous state of exclamation, sometimes delivered loud and clear, occasionally almost explosive, often *sotto voce*."

The vocalizations of adult and juvenile Great Tits are summarized in Table 1; 20 vocalizations are used by paired males. This compares well with the 16 recorded from adult male Song Sparrows (*Melospiza melodia*) (Nice, 1943:274). Interestingly enough Eric Simms in his review of "Bird-Song" by W. H. Thorpe, 1961, in *British Birds*, 54: 435 writes that "among those Passerines whose vocabularies have been well studied the number of basic call-notes averages about fifteen, which suggests that this is the number of main items of information to be conveyed. Incidentally, I have found that among mammals the Badger has thirteen basic calls used in a similar way to those of some of the Passerines."

Young Great Tits between 7 and 14 days out of the nest begin to warble; this is strictly a "leisure activity" and is pursued by both sexes. Miss Gompertz has also recorded similar warbling from young Blue and Coal Tits (*Parus caeruleus* and *ater*).

"It is usual for males to have at least four clearly distinguishable songs; the highest number of variants transcribed or recorded from an individual was seven," p. 417. A bird usually sings one song for three to five minutes before switching to another; eight minutes was the longest period recorded for one song.

This is a truly significant contribution to the biology of the Great Tit, written in a delightful style with sympathy for the birds and insight into their behavior. — M. M. Nice.

BOOKS

50. **The tropical winter home of the migrating birds.** (Flyttfåglarnas tropiska vinterhem.) Kai Curry-Lindahl. 1961. *Folket i Bilds Förlag*, 138 pp. This book is based on excerpts from seven titles of the author's previous works. The rearrangement and popularization of this material is achieved very successfully. The reader is allowed a winter with the birds in central Africa that gives him a splendid opportunity to visualize as from a bird's-eye view the migratory routes via the great river valleys and through the Great Rift Divide into the fantastic regions of equatorial Africa with its highland and lowland rain forests, its savannahs and extensive marshlands, its volcanoes and snow-covered alpine reaches. Here, blissfully intermixed with the exotic forms of the African avifauna, we meet the migrants, unchanged of movement and behavior despite the changed environs, in the places where they spend the better part of their annual life. We find them in the same kind of typical habitats fitting as naturally into their specific tropical niches as if they had been born there and not on the arctic highlands and tundras thousands of miles away to the north.

Curry-Lindahl's descriptive style of writing lends to this tale a fascinating vividness that his scientific integrity never dampens but only further enhances. His contagious curiosity, the thrills of his discoveries, his open eye for the beautiful, the noteworthy, the specific, never fail to impart the enthusiasm and love of the author for all that of which he writes so factually. Were I to select one highlight of many from this book, my choice falls on the start of the Swallows (*Hirundo rustica*) on their northward migration from the Ruzizi marsh: "The first red ray of sunlight shone over the mountains of Urundi. The chirping and the rustle increased to a vast crescendo. Minutes later, the reeds exploded in a cloud of Swallows. Like helicopters they rose for about 30 feet straight up, spread out umbrella-like, took height,

circled in a tight cone, then, without hesitation or breakfast, this mass of birds struck out directly northwards. Never had I imagined that so individual a flier as the Swallow could master so perfect a mass performance." — Louise de K. Lawrence.

51. *Birds in Japan/ a Field Guide.* Yoshimaro Yamashina. 1961. Tokyo News Service, Tokyo, Japan. 214 pp. ill. Price Yen 2200, \$11.50. Bird-minded tourists in Japan have long expressed the need for a simple, illustrated guide to the Japanese birds in English. This book comes very close to filling their requirements perfectly, though it's a bit too large to carry afield in one's pocket, and its price in dollars strikes me as unnecessarily steep, more than double the yen price at the current exchange rate.

Yamashina's book is no imitation of the Peterson-Pough-Collins type of guide, and the earnest amateur may miss their convenient comparisons of similar and related species side by side and their inclusion of pictures and descriptions of all the species one is likely to encounter. It is more like a glorified version of the old Reed Bird Guides of a half-century ago, with overtones of the Hickey and Pettingill guides.

The heart of the book is the 135 pages describing in detail, one or two to the page, the commoner and most outstanding birds the tourist is likely to encounter, each illustrated in color by the Japanese master, Kobayashi. Though the color reproduction is fine, and the pictures perhaps better than average, they do not strike me as representative of the best of Kobayashi's work as I knew it some time ago — the fine detail is lacking and the backgrounds a bit too impressionistic. For each species the accompanying text gives recognition marks, range and habitat, and essentials of breeding and behavior. This section is followed by a convenient 20-page table listing systematically all species known to occur in Japan by their scientific, English, and Japanese names and giving their general status in Hokkaido and from Honshu southward.

A novel and welcome feature is the 50 introductory pages by Nagahisa Kuroda. These give the reader a simple, succinct, but accurate description of Japan's geography and climate and their effects on the distribution of the avifauna. The section on migration is clarified and simplified by a few maps and charts, but inclusive dates would have been welcome. The tourist will find most useful the 20 pages on which Kuroda lists and describes some 30 of the best and most famous places to go to see the birds in Japan. Most of these he and I visited together — goodness it's almost 15 years ago! — and his words and the accompanying photos bring back a flood of happy memories of our days afield together. — O. L. Austin, Jr.

52. *A Synopsis of the Birds of India and Pakistan together with those of Nepal, Sikkim, Bhutan, and Ceylon.* Sidney Dillon Ripley II. 1961. Bombay Natural History Society, Bombay, India. xxxvi + 702 pp. No price given. Though it takes a sound and solid tome to support the top-heavy title this one bears, Ripley's compendium is in no danger of foundering under the load. As the first comprehensive list of the birds of this vast and varied geographical region in more than 30 years, since the completion of Baker's monumental 7-volume "Fauna of British India," it fills a long felt need and will prove indispensable to all students of avian taxonomy and distribution.

Ripley compresses into a single volume the salient features of the considerable advances in our knowledge of Indian birds since Baker's day. For all species and sub-species recognized from the area he gives their ranges extraliminally as well as locally, and their status and habitat in India where pertinent. The synonymy seems carefully prepared and fairly complete. A welcome and highly commendable addition, recognizing their growing need and usefulness, is the inclusion of vernacular English names for all species, which most compilers of such check-lists scorn. I am only sorry that the author did not expand his too brief section on the history and development of ornithology in India. Surely the covers, despite the 738 pages they now encompass, could have withstood another 10 sheets or so for this greatly neglected aspect of our science. — O. L. Austin, Jr.