Also on February 25, a migrating or wandering male Red-bellied Woodpecker *(Centurus carolinus)* actually drove the Flicker away from the hole in order to dig in his stead. Again on March 2 some digging was done by, and on March 7 the hole was at least visited by, a Red-belly that presumably was the same bird.

On March 18 the hole was worked upon by the migrant male Flicker that was present March 7-18. On April 11 it was worked on by still another male Flicker which that day took up this part of the banded one's now deserted winter range, and on May 1 both a male and a female Flicker, and on May 2 the female again, did some digging. On these May days, though, the Flickers were much bothered by Starlings *(Sturnus vulgaris)* and they abandoned the place.

Finally, on May 5, a pair of Red-headed Woodpeckers *(Melanerpes erythrocephalus)* attempted to work at the hole; these, too, were continually attacked by the Starlings, and gave up on the same day.

The Starlings had begun frequenting the tree on April 7, and the hole itself by April 10. By April 20 they had taken in some nest material, and they added to this occasionally through May 5. However, in this instance they were defeated by their own pugnacity: their attacks had prevented the woodpeckers from digging the hole to a usable depth, and after a while they abandoned it themselves.

Feeding. Through March 31 the banded Flicker came frequently to my feeder for suet, and often ate lengthily, yet this by no means weaned him from natural foods. On one day, for example, after spending 10 minutes at the suet he went directly to a wood and began foraging and was still so engaged 40 minutes later when I had to stop watching. Because such statements as I can find about the winter feeding of Flickers emphasize their hunting over the ground or their dependence on fruits and seeds, it seems worth mentioning that besides doing some searching of the ground—where in another winter I once found a male Flicker pounding acorns to pieces—my bird spent considerable time in trees seeking insects. I several times saw him peck lengthily at particular spots on branches as if digging for prey, and once clearly saw him excavate at the base of a dead branch just as a Downy Woodpecker might have done. At other times he picked here and there at branches he was moving over, also in the manner of a Downy, chipped bits of bark off both live and dead stems, peered under the projecting edges of large white oak *(Quercus alba)* bark scales, and searched through piles of dead leaves that had collected in forks. Such heaps of trash probably hold hibernating insects, for I once saw the Flicker swallow after probing in one, and I have on other occasions seen a Flicker and Downy Woodpeckers search them. The leaf nests of gray squirrels *(Sciurus carolinensis)* are searched similarly by Starlings.—Hervey Brackbill, 2620 Poplar Drive, Baltimore 7, Maryland.

Roseate Tern Nesting in Nova Scotia.—During June and early July of 1956, while banding terns in the Tusket Islands, Yarmouth County, Nova Scotia, we visited six islands which supported mixed colonies of Common and Arctic Terns. On only one island, shown on the British Admiralty chart as Little Bald, but known locally as Mossy Bald, we also found a very small group of Roseate Terns and were able to band one Roseate chick.

In an article which appeared in the January-February, 1956 issue of *Audubon Magazine*, Dr. Harrison Lewis reported that Roseates were seen occasionally along the south shore of Nova Scotia, but that there was no current record of a breeding colony. We are glad to be able to report that Roseates are still among the breeding birds of Nova Scotia.—David and Marie Henry, 64 Hoitt Road, Belmont 78, Massachusetts.

RECENT LITERATURE

BANDING

(See also Number 54)

1. The Greenland Bird-Ringing Scheme. Anon. 1956. *Polar Record* **8**(54): 270-271. (Summarized from information provided by Dr. Finn Salomonsen, Universitetets Zoologiske Museum, Kφbenhavn.) "Administrative officials throughout Greenland organize bird-ringing as part of their official duties. Supplies of

rings and notebooks are sent to about eighty centres each year, and are given to suitable men chosen by the local officials. A reward is paid for each bird ringed. This varies according to the difficulties from Kr. 10 for ringing a Sea Eagle to 12 øre for a Snow Bunting. . . . A reward of Kr. 2 is also offered for the recovery of a ringed bird. In order to claim the reward the foot of the bird bearing the ring must be presented to the local magistrate. This enables the species to be identified. No reward is paid if the bird is recaptured in the breeding place in which it was ringed. The expenses of the project are borne by the Ministeriet for Grønland and amount annually to about Kr. 10,000."

From 1946 to 1954 inclusive, 30,215 birds of 21 species were banded, and 2,474 recovered, a phenomenal 8.2 percent. Highest percentages were for *Haliaetus albicilla* 38 percent, *Phalacrocorax carbo* 30 percent, *Corvus corax* 27 percent, *Anser albifrons* 23 percent, *Larus glaucoides* 22 percent, and *Calidris maritima* 20 percent.—O. L. Austin, Jr.

2. Results of the ringing investigation of migration instituted by the Royal Museum of Natural History, Leiden, 51 (1954), 1. (Resultaten van het ringonderzoek betreffende de vogeltrek, ingesteld door het Rijksmuseum van Natuurlijke Historie te Leiden, XLI (1954), 1.) G. C. A. Junge and J. Taapken. 1956. *Limosa* **29**(1-3): 66-95. A long list of recoveries received in 1954 for birds banded in the Netherlands. This section covers the herons through the waders and contains a large number of records, most of them of waterfowl taken during the period 1947-1953, at long last being reported from the U.S.S.R.—O. L. Austin, Jr.

3. Report of the Ringing Committee for the Year Ending March 1956. P. C. Bull. 1956. *Notornis*, **7**(1): 8-13. The 2,717 birds of 19 species banded by "a little under 20" cooperators in New Zealand this year is lower than the previous year's total, but brings the grand total up to 21,360, from which 1,273 recoveries have been received to date. Most rewardng have been the results from banding Gannets *(Morus serrator)*, which breed in New Zealand and winter westward to Australia. One bird traveled some 1,700 miles across the Tasman Sea within 8 days; the long-distance record is a young bird recovered on the west coast of Australia almost 4,000 miles away 8 months after banding. An unusual recovery was the band from a young Black-backed Gull *(Larus dominicanus)* found 17 months after banding inside a fish caught near by. This year for the first time some 350 petrels and shearwaters were banded at sea from fishing boats in Cook Strait; it would be interesting to know how they catch these birds for banding. The New Zealand program is finding its bands do not last on the birds as long as they should. Those on Gannets returning to one rookery "had to be replaced after only three to five years on the birds."—O. L. Austin, Jr.

4. Report of the Swiss Bird Observatory Sempach for the years 1953 and 1954. (Bericht der Schweizerischen Vogelwarte Sempach für die Jahre 1953 and 1954.) Alfred Schifferli. 1955. *Der Ornithologische Beobachter* **52**(6): 169-183. This paper reports on the financial, organizational, and scientific status of Sempach during the period under review. Noteworthy was the opening of the new research station buildings of which a rather complete description with photographs is included. Research projects mentioned include preparation of a nesting bird book, population studies, waterfowl census; studies on the Heron, White Stork, and Lapwing; the effects of birds on the larch leaf-roller; and on bird protection and the furtherance of ornithological education. A brief review of banding activities reports 28,553 birds banded during this period, a decline from 33,621 banded during the preceding 2 years. Recoveries numbered 382 or 1.3 percent. Approximately one-half of the birds were banded as nestlings. —R. O. Bender.

5. Swiss Banding Recoveries. (Schweizeriche Ringfundmeldung.) Alfred Schifferli. 1955. *Der Ornithologische Beobachter*, **52**(6): 184-202. This paper reports on recoveries of Swiss banded birds during 1953 and 1954, excluding near recoveries. It also includes data on birds banded outside of Switzerland and recovered within it. Notable among the reports is the large number of

Starlings *(Sturnis vulgaris)* recovered in Africa, including one banded in Gossan 19 May 1953 and recovered at 32° 18'N 9° 10'W in Morocco 15 November 1953, a distance of 2,200 km. A Brambling *(Fringilla montifringilla)* banded 4 February 1939 at Madretsch was recovered in January 1940 at 42° 40'N 42° 50'E in Russia, 2,900 km ESE. A Pintail *(Anas acuta)* banded 7 August 1941 at 46° 24'N 43° 22'E in Russia was recovered on 24 February 1942 at Ermatingen after a journey of 2,900 km W. These are only a few of the many records in the report which will be of great value to students of migration routes in Europe. —R. O. Bender.

6. Determining Age of Birds at Banding Time. (Die Altersbezeichnung von Ringvögeln.) 1955. Gerhard Zink. *Die Vogelwarte*, **18**(1): 1-5. German bird banders are required to distinguish between unfledged and fledged birds. A further separation is not always possible, but highly desirable. The designation "young (juv.)" is to be avoided and should be replaced by "bird of the year" or "bird of the preceding year." The term "old" may be supplemented by comments such as: not bird of the preceding year, at least second breeding plumage, etc. When possible separate breeding birds, i.e. "local" from migrants. Zink warns banders to be accurate and urges them to report on physiological condition, age, development, etc., in as much detail as possible to enhance the value of their banding records.—Frances Hamerstrom.

MIGRATION
(See also Numbers 54, 55)

7. Meteorological Variables and the Northward Movement of Nocturnal Land Bird Migrants. Gilbert S. Raynor. 1956. *Auk*, **73**(2): 153-175, In this very interesting paper the author, a meteorologist, advances the hypothesis that "nocturnal migrants find flight easier through stable air than through turbulent air, that stable conditions are of major importance in triggering such flights, and that a positive relationship exists between atmospheric stability and nocturnal migrations."

Raynor examined 2,500 reports of migrants and plotted their probable flight paths on maps showing areas of stable and unstable air, wind direction and speed at 2,000 feet, and surface weather conditions classified as favorable, unfavorable, or intermediate. From the analysis of these maps he concludes that spring migration normally takes place with favorable winds in stable air and that migratory flights are often terminated at the edge of an area of unstable air or unfavorable winds.

Raynor's arguments are logical and very convincing, but few readers will accept the statistics with which he tries to prove his case. He submits his classification of the probable paths of the migrants' flights to statistical analysis and concludes that the results are "highly significant" in favor of his hypothesis. Yet he admits that the classification which he is analyzing statistically "is dependent for accuracy on my judgment of how great a distance was travelled by each flight." Such procedures weaken an otherwise valid interpretation of observed phenomena.—William H. Allen.

8. Compass Directional Training of Western Meadowlarks *(Sturnella neglecta)*. Ursula von Saint-Paul. 1956. *Auk*, **73**(2): 203-210. This paper reports on an experiment in which five hand-reared Western Meadowlarks were trained to seek food in a given direction. Training was given at the same time each day. The training method used eliminated all visible directional clues other than the sun. After 20 days of training each bird was tested when the sun's position differed from that in the training period, to determine whether the bird would choose a direction based on a constant angle with the sun or select correctly the true direction used in training. (The use of the term "compass direction" in this paper is confusing; it is apparently intended as a synonym for "true direction.") When the sun was visible two birds were able to select the true direction within 90 degrees, one tended to maintain a constant angle with the sun, and tests on two were inconclusive. "On overcast days the birds were disoriented." The author seems justified in stating "The results of this

study give further support to the supposition that the ability of true azimuth orientation, where the sun's azimuth position and time of day are the necessary requirements, is general among birds." However, her statement that "the sun is treated [by birds] in a peculiar manner which is the product of an elaborate evolutionary process" needs further clarification and substantiation.—William H. Allen.

9. New Data on the Mediterranean Gull. (Nouvelles données sur *Larus melanocephalus* Temminck.) Nöel Mayaud. *Alauda,* **24**(2): 123-131. From 34,443 Mediterranean Gulls banded at Orlov in Russia between 1930-1952 there have been 627 (1.7%) recoveries. A study of these shows the main migratory movements of the species. The gulls travel and winter in homogeneous groups. Most of them migrate west and southwest, a small contingent southwards and another minor group to the Caucasian coasts of the Black Sea. Their chief wintering areas are the Mediterranean coasts of southern Italy, Tunisia, Greece, France, and Spain. During their westward journey the gulls traverse great land masses, plains, and mountains. The most easterly point reached is the Azov Sea, the most northerly and westerly the Baltic and North Seas as well as the French and Portuguese Atlantic seaboards. Only vagrant and straying individuals, apparently, attain the last three seashores.—Louise de K. Lawrence.

10. Concerning White Stork Migration from Syria through Egypt. (Vom Zug des Weissstorchs in Raum Syrien bis Ägypten.) 1955. Ernst Schüz. *Die Vogelwarte,* **18**(1): 5-13. A comprehensive summary of flock counts, movements, and band records of White Storks *(Ciconia ciconia)* in the Near East. Fall migration is over a rather narrow migration route and of short duration. Spring migration, on the other hand, has been reported over a broad front and of long duration. Schüz believes that as far as breeding adults are concerned, spring migrants travel with as much dispatch as in fall, but that this is masked by observations on hordes of immature storks and a few sick hangers-on. Particularly late migrants may have a weak migratory urge and be uncertain of the route.—Frances Hamerstrom.

11. Delayed Emigration of Certain Birds in Autumn 1954. J. A. G. Barnes. 1956. *British Birds,* **49**(2): 74-79; (4): 167-171. Details are given on late occurrence of summer visitors and passage migrants. Two factors seemed to have contributed to this situation: "a hold-up of departures owing to the lack of favourable weather for migration, and a high rate of survival of lingering birds because of the absence of early frosts and consequent abundance, for the time of year, of insect food."—M. M. Nice.

12. The Migrant Loons of Western Pennsylvania. F. W. Preston. 1956. *Auk,* **73**(2): 235-251. Following an interesting (if involved) mathematical analysis of field observations of the Common Loon on Oneida Lake, Preston concludes there is no evidence that loons in central Western Pennsylvania travel in mated pairs on spring migration.—J. C. Dickinson, Jr.

POPULATION DYNAMICS
(See also Numbers 15, 19, 21, 36)

13. Mortality and Egg Production of the Meadow Pipit with Special Reference to Altitude. J. C. Coulson. 1956. *Bird Study,* **3**(2): 119-132. Analysis of the extensive data from B. T. O. nest record cards of *Anthus pratensis* shows this species starts to lay 3.8 days later in the north of Great Britain than in the south at sea level, and 1 day later for each 130 feet rise in altitude. The mean clutch size of 4.3 eggs decreases from 4.52 near sea level to 4.07 over 1,000 feet, apparently reflecting the more severe climatic conditions at higher altitudes. Breeding success averages 43 percent, and is significantly higher as altitude increases, believed to be due to a decrease in nest predation, particularly by cuckoos, at higher altitudes. Analysis of banding recoveries shows the species' first year mortality after fledging to be 76 percent, and average adult mortality 57 percent. The latter figure is corroborated by the 58 percent average adult mortality obtained from a larger sample of "recaptures" (returns in our usage).

These are intriguing analyses and, as far as I can see from the material presented, the mathematics are correct and the conclusions sound and logical. However, the author fails to point out or to explain one manifest discrepancy, the fact that the rate of recruitment does not balance the annual adult mortality, which it must if a species is to maintain itself. With an annual adult mortality of 57 percent, of each 100 pairs (200 birds) that start a breeding season 114 die before the start of the next one. To maintain the population, therefore, each 100 pairs must fledge enough young so that 114 will survive to start the next breeding season. As this species rears two broods which average 4.3 eggs per clutch with 43 percent success, each 100 pairs fledges 370 young annually, of which 76 percent or 281 die during the ensuing year. This leaves only 89 young, or slightly less than 80 percent of the 114 needed to maintain the population. Therefore Great Britain's Meadow Pipit population must be declining at the rate of about 20 percent per year, Q. E. D.

Let us assume, in the absence of any other evidence to the contrary, that the Meadow Pipit is holding its own in Great Britain—as indeed we trust it is. Then, unless the demonstrated annual loss is being made up by immigrants from abroad (heaven help us, no!), something must be wrong with the figures. I respectfully suggest that the discrepancy most probably lies in the observed fledging success of 43 percent. If all the other figures are valid, and we have no reason to question them, fledging success must be slightly better than 55 percent to produce the required annual recruitment. I submit, then, that it may well be 55 percent in all *unobserved* nests, and the discrepancy of 12 percent is a measure of the nest mortality induced by the visits of the observers to the nests they watched, unwittingly and unintentionally of course, by thereby exposing the nests to easier discovery by crows, gulls, cuckoos, and other natural predators. The only way to prove or disprove the validity of my contention, I fear, is by observing the unobserved nests, which could be done only by enlisting the aid of the pixies and the leprechauns.—O. L. Austin, Jr.

14. The Annual Mortality of the Blue Tit in different Parts of its Range. D. E. Snow. 1956. *British birds*, **49**(5): 174-177. Blue Tits *(Parus caeruleus)* can be distinguished in their first breeding season from older birds by their wing-coverts. The author examined over 1,000 museum specimens from all parts of the range and decided that "the mortality of juveniles is higher than that of adults in October and November, but from December onwards juvenile and adult mortality are about equal." From 320 specimens in the breeding season the author calculated percentages of "adults" and first year birds from Britain, but only 40 to 59 from the other regions. No mention is made as to any difference in number of broods attempted in the different regions. An inverse correlation was found between the percentage of old birds and clutch size: Britain—30% adults, 11.6 eggs; Northern Europe—35%, 9.9 eggs; North Africa—42%, 7.5 eggs; Iberian peninsula—55%, 6 eggs; Canary Islands—55%, 4.3 eggs. "Thus Blue Tits can either breed slowly and live longer, or breed faster and die sooner. It is suggested that the control lies, ultimately, not in the mortality factors themselves, but in the number of young which they can produce annually in the area in which they live." One wishes that this suggestion had been discussed more fully.—M. M. Nice.

NIDIFICATION AND REPRODUCTION
(See also Numbers 13, 14, 31, 36, 45)

15. Observations of a Nesting Colony of American Brant. Thomas W. Barry. 1956. *Auk*, **73**(2): 193-202. The author presents a record of his observations of the Southhampton Island (Hudson Bay) colony of *Branta bernicla hrota*. In 1953, 700 nesting pairs and 400 yearlings visited the island. Previous records are of 2 nests (1934) and eleven nests (1936). It is not known whether the present size of the colony is due to growth or the removal of another colony to this island. The brant colony is located on the mass of small, low islands lying in the 2-mile-wide delta of the Boas River. It is separate from areas occupied by Blue and Snow geese which nest inland on the island. The brant arrived on June 8 and appeared to be mated on arrival. One possible courtship display was noted. Apparently no birds arrived after June 13. The first egg

was found on June 16. Incubation required 23-25 days. Seventeen nests had a total of 75 eggs (av. 4.41). From these 75 eggs, 52 young left the nests. The remainder failed because of various natural causes (sterility, predation, desertion, etc.). Principal predators appear to be Herring Gulls. The arctic fox vacates the wet lowlands when the thaw begins. Polar bears were observed in the colony but they seemed to cause no disturbance and did not molest the birds or nests. Local eskimos prefer to eat the Blue and Snow geese and as a result largely ignore the brant colony. I disagree slightly with Barry's statements along these lines: " . . . the brant congregated . . . to await favorable conditions." "Because they had grown accustomed to me . . . " " . . . they took a strong liking to the *Equisetum* there . . . "—J. C. Dickinson, Jr.

16. A note on the Determinative of the Number of Eggs in a Clutch in the Laro-Limicolae. (Note sur le déterminisme du nombre des oeufs chez les Laro-Limicolae.) C. Ferry. 1956. *Alauda,* **24**(1): 49-52. Basing his argument on K. Paludan's theory that the degeneration of the "emergency" follicles in the ovaries of some species is governed by the tactile stimulus on the brood-patch of the first eggs laid in a clutch, the author cites and discusses three cases in which apparent proof of this theory exists. A black-tailed Godwit *(Limosa limosa)* was found incubating three eggs with a fourth fresh egg, judged by its form and pattern evidently laid by the same female, lying cold 16 cm. from the nest. A Common Tern *(Sterna hirundo)* was similarly incubating three eggs while a fourth, exactly like the three first ones, lay in the grass 30 cm. away. A Ringed Plover *(Charadrius hiaticula)* incubated a second clutch of three eggs while a fourth lay where the female nested the year before and a fifth was found a metre farther on balancing precariously on a piece of rock. The two outside eggs were fresh and cold, and resembled in detail the three in the nest. Moreover, they were strikingly alike to the clutch laid by the same female the previous year in the same spot. In neither case was there any indication of more than one female being involved.—Louise de K. Lawrence.

17. Studies of the Life History of the Pink-billed Weaver in the Lower Senegal Valley. II. The Reproduction. (Recherches Écologiques sur les *Quelea quelea quelea* (L.) de la basse vallée du Sénégal. II. La reproduction.) G. Morel and F. Boulière. 1956. *Alauda,* **24**(2): 97-122. This paper presents the results of studies in 1955 of two nesting colonies and the reproductive behavior of birds kept in an aviary. In 1955 the rains began a month earlier than usual and were heavier than normal. The weavers adapted their reproductive rhythm to the abnormal conditions remarkably. The increased abundance of insects and vegetable foods was believed to be the chief cause of a second nesting cycle which started about 6 weeks after the first one ended.

Six stages of nest construction were recognized: (1) the bridge, (2) the ring, (3) the nest with double openings, (4) the pocket, (5) the covered nest lacking the pent-house only, and (6) the finished nest. The male built the nest, weaving with the bill, the feet playing a lesser role in this work. A whole colony of nests was built in about a week. The larger colony attracted the birds of smaller neighbouring colonies which abandoned their own homes to join the larger community. One tree selected at random contained 65 nests.

The nests were constructed before pair-formation. In the defence of the nest intimidation displays consisted of (1) gaping, (2) "ballooning," wings lifted over the back, tail either elevated or depressed. It was directed against both males and females that visited the nest site. Real fighting, occasionally to the death, often followed these displays. In nuptial displays the birds adopted a horizontal posture, wings lightly opened and vibrating, feathers sleeked, tail sometimes spread. The males displayed before their nests to attract the female, who sometimes but not always responded with similar poses and movements. In some cases the female took the initiative. Pair-formation began at the end of nest construction, intensified rapidly and finally ended in a "frenzy of copulation." At one colony the time elapsed between the first nuptial display and the start of egg-laying was 2 days. Egg-laying often started before the nest was completed and quite often the urgency to lay caused females to drop their eggs on the ground.

The clutch consisted of from one to six eggs. The mean clutch size during the rainy year 1955 was significantly larger than in drier years. While the higher fertility may in part also have been due to the improved food situation resulting from an actual decline in the weaver population that year, the abundance of food produced by the favorable climatic conditions must be considered the major factor.

Territorial behavior in *Quelea quelea* was reduced to defence of the nest itself by the male during construction and by both sexes after pair-formation. Aggressiveness continued intense during incubation but weakened after the young hatched.

The incubation period was 12 days. Both sexes brooded in the daytime and the female was on the nest at night. Nestlife lasted 16 days. The nesting success was greater in nests containing one or two eggs than in those with three or four. It was greater in the favorable nesting season of 1955 than in the previous years. The mean weight of the young was also higher in that year. Experiments with increased daylight advanced sexual maturity in the birds and their molting cycle.

This is an important and careful study based on extensive observation of the birds in the field as well as in captivity, combined with apt experiments. The only criticism this reviewer might make is that a fuller picture on the attentivity during incubation and nest-life would have been desirable. Some life-history students would undoubtedly like to know more about the extremely brief periods of actual sitting and the sharing of duties between the parents in a manner that seems peculiar to the species. Good photographs and drawings illustrate the article.—Louise de K. Lawrence.

18. The Number of Eggs Laid by the Cuckoo. (Eizahl des Kuckucks.) 1955. Gerd Diesselhorst. *Die Vogelwelt*, **76**(2): 53-58. Diesselhorst suggests that accounts of high numbers of eggs laid by cuckoos *(Cuculus canorus)* stem largely from egg collectors who may have stimulated this apparently indeterminate layer to further laying. His 17-year nesting study at Fürstenfeldbruck (912 nests of host species in all, and one to three female cuckoos annually) leads him to believe that the local cuckoos laid at most six eggs apiece. He adds that the hypothesis that the cuckoo is stimulated to further laying by the sight of suitable nests needs testing.—Frances Hamerstrom.

19. Data on the Breeding Biology of the Swift (Apus apus) in Oltingen and Oxford. (Daten zur Fortpflanzungsbiologie des Mauerseglers (Apus apus) in Oltingen and Oxford.) Emil Weitnauer and David Lack. 1955. *Der Ornithologische Beobachter*, **52**(5): 137-141. From the English summary.

1. Comparisons have been made over the same years of Swifts breeding at Oltingen in Switzerland and Oxford in England, Oxford being about 800 km northwest of Oltingen and having a cooler and wetter summer.
2. On the average, laying starts 5 days earlier at Oltingen than Oxford, but the interval has varied in different years owing to the weather.
3. The average clutch is highest in the 3rd week of May, declines markedly in the last week of May and still more in June. Among clutches laid between the same dates, those at Oltingen have been little if any larger than those at Oxford.
4. All the young from broods of 3 have been raised successfully at Oltingen except in the occasional bad summer, but at Oxford only in the occasional fine summer. Each 100 pairs raises on the average 50 more young each year at Oltingen than Oxford.—R. O. Bender.

20. Observations on the Tawny Owl. (Beobachtungen am Waldkauz (Strix aluco).) Samuel Siegenthaler. 1953. *Der Ornithologische Beobachter*, **53**(1): 10-12. The author used small kegs hung at a height of 6-9 m for nesting houses. Each evening at dusk, the female left the nest for 20-25 minutes; during this time the nest was examined so that the female was not disturbed. The first egg was laid on 7 March, the second on the 10th and the third on the 14th. Each egg hatched 29 days after laying. All the young left the nest together on 10 May when the oldest was 35 and the youngest 28 days old. At first they hunted insects on the ground, later they hunted mice. The young

were still being fed by the female at the end of August. The author found no evidence of a second brood. During periods of bad weather, especially in poor mouse years, this species and the Barn Owl *(Tyto alba)* will eat their young, selecting first the smallest. During these periods they also take many other birds.—R. O. Bender.

21. Contributions on the Biology of the Raven *(Corvus corax).* Beiträge zur Biologie des Kolkraben. Rolf Hauri. 1956. *Der Ornithologische Beobachter,* **53**(2): 28-35. The author reviews the distribution of the Raven in Bern Canton and reports that it is becoming more common as a nesting bird. He then reports on several incidents in which an adult bird apparently carried water in its throat to give to the young. Water was secured about 10 m below the nest. In other cases, food was immersed in water before being presented to the young. The frequency of this behavior diminished as the young grew older and ceased when they were approximately 30 days old. In warm weather, water was carried more often. In this area, the Ravens did not use the same nesting site more than once. (The nests were situated in cliffs.) Of 15 young observed, at least five died during or shortly after the nesting period, one after 7 and another after 16 months. In winter, the old Ravens with their young frequented an area at least 16x16 km in area.—R. O. Bender.

22. Observations at a Golden Eagle's Nest. (Beobachtungen an einem Steinadlerhorst.) Heinz Iselin. 1956. *Der Ornithologische Beobachter,* **53**(2): 125-128. A Golden Eagle *(Aquila chrysaëtos)* nest near Davos, Switzerland, was located in a rocky cliff 20 m in height at an altitude of 1890 m in an area rich in game. The smaller of the two young was found dead at the foot of the cliff a few days after the nest was discovered. The remaining young was successfully raised. Periodically the old birds brought fresh tree branches to the nest. Principal food appeared to be the marmot. Most of the paper is concerned with observed details of exercise, feeding, and resting of the young bird.—R. O. Bender.

23. Some Notes on the Red-spotted Bluethroat. S. B. Peakall. 1956. *British Birds,* **49**(4): 135-139. Observations on 7 nests of *Cyanosylvia s. svecica* at Abisko in Swedish Lapland. Building and incubation were performed by the hen only. In nests with eggs, females were present on 49 of 50 visits. Incubation in two nests lasted 12 and 13 days; fledging 10 to 12 days. Cock and hen fed about equally. A nest was watched "periodically" for 24 hours when the young were 4 to 5 days old. The female brooded from 22.15 to 03.00. "The working day of the cock was somewhat longer, feeding continuing until 23.15 hours and commencing again at 03.00 hours, a working day of 20¾ hours."—M. M. Nice.

24. A Survey of the Habit of Nest-Appropriation. N. L. Roberts. 1955. *Emu,* **55**(2): 110-126; (3): 173-184. The author presents a broad, general account of the well-known habit of certain birds to use the nests of other species instead of building their own, a phenomenon as yet imperfectly understood despite a voluminous literature. Australian sources, both published and unpublished, yield references to its occurrence in 80 species of Australian birds. Consultation of standard sources and correspondence with other observers throughout the world show the habit to occur practically wherever birds have been studied. Most widely demonstrated, perhaps, by certain birds of prey, it is indulged in more or less frequently by a wide range of other groups as well. It varies in degree from the few species that always appropriate other birds' nests and never build one of their own, to infrequent, isolated cases of it in many species that normally build their own nests. "A study of these records does not reveal any single or simple explanation of the habit of nest-appropriation . . . the habit . . . cannot be explained on any phylogenetic basis, for it has arisen independently in a number of widely-different groups, which build very diverse structures." Nor is the author convinced that the modern behaviorists' generally accepted explanation of "imprinting" answers the problem adequately. "How for example, can it account for the long list of single records?" A thought-provoking discussion of a subject that promises ample reward for further intelligent investigation and study.—O. L. Austin, Jr.

25. Bird/Wasp Nesting Associations. K. A. Hindwood. 1955. *Emu*, **55**(4): 263-274. This discussion of the tendency of certain species of birds to nest in association with such aggressive social insects as ants, bees, and wasps was prompted by the discovery that several small Australian bushwarblers and finches do so rather frequently. A survey of the literature and correspondence with observers abroad shows the practice to be world wide, but restricted chiefly to the tropics where such insects are more prevalent. The birds that do so are usually small ones, "largely species of inoffensive habits," and often communal nesters; many show a tendency to nest in trees or shrubs bearing thorns or spiny leaves, and most of them build covered or roofed nests. The evidence shows that in all such associations "the birds seek out the wasps' nests, not the wasps the birds' nests," the insects "tolerate the presence of the birds, yet show little or no forbearance towards human or other intruders," and "it does not seem that the wasps benefit in any way from the presence of the birds." The author believes the birds nest near the insects because of their "desire to be safeguarded from either mammals, reptiles or predatory birds." He suggests that the predisposition of both birds and insects to nest in the same trees and shrubs may have brought on the habit through proximity, but "the absence of any evidence that the habit has risen spontaneously . . . [indicates] a long period of evolution. Possibly the same point obtains in such remarkable practices as egg-parasitism and anting."—O. L. Austin, Jr.

BEHAVIOR

(See also Numbers 17, 21, 22, 24, 45, 52, 53)

26. Observations on the Voice and Some Displays of Certain Pigeons. Derek Goodwin. 1956. *Avicultural Magazine*, **62**(1, 2): 17-33; 62-70. Based on observations on 10 species of *Columba* and *Streptopelia* in freedom and captivity, and illustrated with many sketches, this paper is a significant contribution to the study of comparative behavior. "Display-plumage . . . occurs most commonly on the neck and upper breast. . . . These areas are always exhibited —by inflating the neck and erecting the display-plumage—in the bowing-display." "Parading" indicates sexual readiness. This behavior is combined with "Wing-lifting" in Stock and Rock Doves *(Columba oenas* and *livia)*, but not in those species under consideration that lack signal markings on the wings. As to the "display-flight," its function is "to advertise the presence of a bird in reproductive condition." It is strongly attractive to unpaired females and to lost and tired birds. "It sometimes seems . . . that in *C. livia*, as in man, lost or bewildered individuals have a tendency to follow any of their species who shows a self-assured and determined manner. Such behavior would be useful to them since it would ensure that, sooner or later, they would be led to an adequate feeding ground."

"Defensive-threat display" is shown by half-feathered nestlings and injured adults; the erection of feathers and wing indicates a conflict situation. "Voice" is discussed under 4 "basic calls"—advertising-coo, display-coo, distress-call, and excitement-call. The paper concludes with a brief discussion of phylogeny. —M. M. Nice.

27. "Anting" by House Sparrow. A. M. Common. 1956. *British Birds*, **49**(4): 155. A male *Passer domesticus* in mid-August was seen "picking up ants, then rubbing them under its wing and tail with its beak." The editors know of no previously published record of anting by this species.—M. M. Nice.

28. Further Experiments with an Artificial Nestling Gape. Monica M. Betts. 1956. *British Birds*, **49**(6): 213-215. A simplification of the method described in 1954 for procuring samples of food brought to nestlings, whereby the gape is used outside an ordinary nest box. Differences were found in the foods brought to nests in pine woods by three different species of titmice. As many as 20-200 small items are sometimes carried in one bundle!—M. M. Nice.

29. The Enigma of Bird Anting. H. R. Ivor. *National Geographic Magazine,* **110**(1): 105-119. A collection of remarkable photographs in color of birds anting. Mr. Ivor has seen more birds ant than anybody else in the world. In his observatory he has "watched upwards of 30 species of birds ant and seen thousands of individual antings." He describes the techniques of various species and discusses some of the theories advanced to explain this behavior. He finds it "puzzling that some birds ant frequently and others do so rarely. In nearly 18 years of observation, for example, I have seen the evening grosbeak and the cedar waxwing ant only once. In many ways it seems that anting is a primal form of behavior, lost by some birds but retained by others." The puzzle remains unsolved.—M. M. Nice.

30. Population Changes and Roosting Time of Starlings. David E. Davis. 1955. *Ecology,* **36**(3): 423-430. Roosting time of flocks of *Sturnus vulgaris* was noted at Baltimore, Md., on 281 dates from Dec. 19, 1950, to May 14, 1955. "The birds roosted about half an hour before sunset from November to March, at sunset in April, and almost an hour before sunset in July." Numbers of birds were highest in September, decreased in November, increased in January, and dropped to a low in June. This pattern was followed all three winters, but fewer birds were present in 1952-53. An extensive bibliography is appended.—M. M. Nice.

31. Communal Life of the Black Kite. (Über das gesellige Leben des Schwarzen Milans.) 1955. Nikolaus Langelott. *Die Vogelwelt,* **76**(4): 121-125. The Black Kite *(Milvus migrans),* which is ordinarily a solitary nester as far north as Germany, has developed colonies in particularly favorable locations near Frankfurt, one with 5 to 7 nests since 1950 and the other with 19 nests in 1955. Langelott suspects that the abundance of dead and sick fish has caused the nesting range of the Black Kite to spread up the Main River in the last two decades. Behavior notes of interest are: use of a joint flight play area, and use of joint roosts—up to 18 kites in a single roost tree, and the largest roost with 50 individuals sitting in close formations.—Frances Hamerstrom.

32. On the Depth to which our Waterbirds Dive. (Ueber die Tauchtiefern unsere Wasservögel.) Jakob Huber. 1956. *Der Ornithologische Beobachter,* **53**(1): 5-9. This is a report covering 25 years of observations on birds caught in nets, weirs, or on fishhooks at known depths in the Sempachersee. Relatively few birds were taken during this time. The results are summarized in the

Common Name	Scientific Name	Maximum Depth Taken, Meters
Red-throated Loon	*Colymbus stellatus*	24
Great-crested Grebe	*Podiceps cristatus*	23
Black-throated Diver	*Colymbus arcticus*	21
Velvet Scoter	*Melanitta fusca*	11

Data are also given for 11 other species taken at lesser depths. Unfortunately, the author does not indicate the depth of the lake so that we do not know how far from the bottom these birds were taken. In an editorial comment, Dr. E. Sutter reviews the paper by Schorger (*Wilson Bulletin,* **59**: 151-519) on the same subject.—R. O. Bender.

33. On the Hoarding Behavior of the Nutcracker. Zur Vorratsanlegung des Tannenhähers.) Urs Glutz von Blotzheim. 1956. *Der Ornithologische Beobachter,* **53**(2): 36-40. Nutcrackers *(Nucifraga caryocatactes)* are well known for their habit of storing nuts for use during the winter. The author observed Nutcrackers transporting nuts from an open northern-exposure mixed woodland to cache them in a thick southern-exposure spruce woods at least 2-4 km away across the Rhone valley. Several visits to the Aletschwald on the northern-exposure slope between December 31 and June 8 produced only three individual Nutcrackers and very few holes in the snow (50 cm to 1 m deep) characteristic of those made by Nutcrackers recovering their hoarded stores. The author suggests that the birds transported their winter food supplies to the southern exposure for greater ease in recovery during the winter. He says that, in the light of present knowledge

of Swiss Nutcrackers, this behavior seems to be exceptional and further studies will be required to determine whether it represents a phenomenon attendant to a pronounced place attachment or results from a learning process by this particular population. In Sweden these birds stay permanently within a limited area and are presumed to use their familiarity with the area in finding the storehouses under deep snow. The author also discusses the possibility that the few birds found in the Aletschwald during the winter were birds of the year, not too familiar with their territories, because the absence of shells or husks around the holes they had dug in the snow indicated that they apparently did not uncover caches of nuts. He also discusses the behavior of these birds in removing seeds from cones. This is a very interesting paper.—R. O. Bender.

CONSERVATION

34. Predation and Protection at Dungeness Bird Reserve. H. E. Axell. 1956. *British Birds,* **49**(6): 193-212. From 1939 to 1952 the gull and tern colonies of this Kentish Reserve suffered from disturbance by the Army and predation by people, Carrion Crows *(Corvus corone),* hedgehogs and foxes. The hunting techniques of the crows are discussed, and methods of control of predation described. Numbers of breeding pairs of eight species of birds, and numbers of clutches laid and hatched by Common and Little Terns *(Sterna hirundo* and *S. albifrons),* are given from 1952 to 1955.—M. M. Nice.

ZOOGEOGRAPHY
(See also Number 9)

35. Birds of the Chicago Region. Edward R. Ford. 1956. Chicago Academy of Sciences Special Publication No. 12, pp. 117, price $1.50. This long-awaited work brings up to date the earlier edition under the authorship of Ford, Sanborn, and Coursen. The addition of further sources of information, supplementing records of actual specimens in museums and private collections, greatly increases the value of the work as an expression of regional bird life. These sources are the records of local bird clubs, bird-banders, and particularly the quantitative field notes for Lincoln Park that William Dreuth kept meticulously for years. This is a concession to the elevated plane sight records have achieved in the present era of excellent field guides and optical equipment, even though it is still recognized that records based on actual specimens must be considered more concrete. Among added features is a better system of estimating relative abundance of species at each locality, pin-pointed by county. A few users observe that the additional information makes it more difficult to find arrival and departure dates than in the old edition, but this is not a serious fault and was unavoidable. It appears that no effort was spared to make the list as useful as possible. It is a fitting tribute to the devotion of Ed Ford, an inspiring friend of my early days.—William J. Beecher.

36. Dynamics of Range Expansion of Cattle Egrets in Florida. 1956. Dale W. Rice. *Auk,* **73**(2): 259-266. The author reports his observations of *Bulbulcus i. ibis* in a rookery on the campus of the University of Florida. The species first appeared in the mixed heron, ibis, water turkey rookery in 1954. This represented a 180-mile northward extension of its previously known breeding occurrence. Several individuals were seen in the pre-nesting period. The total population at the close of the breeding season was 12; 10 individuals appeared in 1955. Observations were terminated prior to the conclusion of this breeding season.

The source of these birds is reasonably assumed to the Lake Okeechobee region of Florida, where the species is presently flourishing. Rice discounts random wandering of adults as an explanation for the establishment of the new colony. On the basis of his observations establishment of the colony by wandering juvenals does not seem likely. The author concludes that the Cattle Egrets became mixed with local herons on their wintering grounds in southern Florida and accompanied them when they returned north to breed. Rice suggests that the successful establishment of the species in Florida is directly related to the

expansion of the cattle industry in the state. The successful establishment of the Gainesville colony with an initial introduction of only seven individuals is explained as resulting from interspecific reactions to social stimuli. The author proposes that, if other species had not been present, a minimum of 10 pairs would have been necessary for success. This latter conclusion appears to be based upon an account of the species in South Africa where it is reported to nest in colonies containing from 10 to 2,000 nests. The habit of associating with other species of herons is thus proposed as having survival value in facilitating dispersal and establishment.—J. C. Dickinson, Jr.

37. Short Notes and Observations from Central Pyrenees. (Brèves notes d'observation dans les Pyrénées centrales.) Yves Boudoint and Marc Laferrère. 1955. *Alauda,* **23**(3): 172-181. This is an annotated list of birds seen during a trip through the Valley of Neste l'Aure to the boundaries of the Resérve Botanique du Néouvielle. In all 52 species were seen of which 14 were raptors, including 4 species of vultures (Aegypiidae). Signs of Ptarmigan *(Lagopus mutus)* were found at elevations of 2,560 metres.—Louise de K. Lawrence.

38. List of Tunisian Birds. (Inventaire des Oiseaux de Tunésie (Appendum).) Georges Gouttenoire. 1955. *Alauda,* **23**(3): 217-218. Proof of nesting of the Shelduck *(Tadorna tadorna)* found 19 June 1955 at Lake Kelbia in the discovery of 4 adults and 18 ducklings. This was apparently two broods 1 and 3 weeks of age, as indicated by three collected birds. On 14 July about 20 Ruffs *(Philomachus pugnax)* were encountered in the same locality. One of the birds which was collected proved to be a young of the year in very fresh plumage. Although this find may not be considered certain evidence of nesting, the presence of this juvenile nearly a month and a half earlier than the fall migration of the species begins on this latitude is worthy of notice. Numerous other birds seen at the same time, such as Glossy Ibis *(Plegadis falcinellus)*, Curlews *(Numenius arquata)*, Black-tailed Godwits *(Limosa limosa)*, were presumably all non-breeding individuals.—Louise de K. Lawrence.

39. Census of the Rouzic Island Birds April 1955. (Dénombrement des Oiseaux de l'Ile Rouzic (Sept-Iles) en Avril 1955.) Ph. Milon. 1956. *Alauda,* **24**(1): 37-48. The author secured permission to conduct his first bird count on this protected island in 1950. The data of his 1955 survey are based on meticulous methods of counting and observation, described in detail and well worthy of note by anyone interested in similar research. Comparison of the results of the two counts brought out many interesting changes. The Gannet *(Sula bassana)* increase of 550 percent was due partly, it is thought, to the immigration to the island of birds hatched elsewhere, but the increases in Shags *(Phalacrocorax aristotelis)* and Herring Gulls *(Larus argentatus)*, 58 percent in each, might well have developed from the previously existing populations. The Great Black-backed Gull *(Larus marinus)* population remained stationary, but 100 pairs of Kittiwakes *(Rissa tridactyla)* were present in 1955 where none were seen in 1950. Most advanced in their nesting cycle at the time of the census (April 11-15) were the Gannets with most pairs already incubating. The Laridae were just establishing themselves on their territories and preyed extensively on the eggs of the Gannets and Shags, while the Alcidae were not yet present in full numbers. One Bridled Guillemot *(Uria aalge intermedia)* was observed.—Louise de K. Lawrence.

40. Notes on the Birdlife in the Jura Mountains. (Notes d'Ornithologie Jurassienne.) Paul Géroudet and Paul Barruel. 1956. *Alauda,* **24**(2): 81-96. This is a descriptive paper on the avifauna of the Juras, which appear to have been little explored hitherto. The observations were made during excursions in the spring and early summer 1955. A list is given of the species which furnished the most interesting observations, illustrated by a few excellent pen drawings. It includes grebes, herons, ducks, coots, and shorebirds found principally in the region of Lake Remoray. There is also a table on the species found at various elevations, giving their abundance as well as their status as breeding birds or visitors. The less common birds encountered ranged from the Short-toed Eagle *(Circaëtus gallicus)* to the Pygmy Owl *(Glaucidium passerinum)*, from the Rock Thrush *(Monticola saxatilis)* to the Fieldfare

(Turdus pilaris). The three nesting colonies found of the latter are the most westerly known breeding grounds of the Fieldfare in Europe.—Louise de K. Lawrence.

41. The Occurrences in France of the White-winged Tern. (Les apparitions en France de la Guifette leucoptère *(Chlidonias leucopterus* (Tem.).) Georges Guichard. 1956. *Alauda*, **24**(2): 139-144. This review traces the breeding-grounds of the White-winged Tern from eastern central Russia, through central Siberia, to Sakhalin Island and its wintering grounds from the northern coasts of Australia, the Malayan States, India, to East Africa. Its occasional appearances in France in spring have been of single birds in the company of Whiskered and Black Terns *(C. hybrida and C. niger)* which naturally enough attract vagrant *leucopterus*. But it still remains for the hopeful ornithologist to observe and prove its nesting in France.—Louise de K. Lawrence.

42. The Avifauna of Newly Created Polders. (Die Vogelwelt der neuen Köge.) 1955. Dietrich König. *Die Vogelwelt*, **76**(2): 41-53. Progressive changes in avian use of coastland after diking and conversion to agriculture show a marked increase in numbers of species breeding. Species are listed for stages of agricultural succession.—Frances Hamerstrom.

43. Notes on the Distribution of the Goshawk in the Eastern Palearctic. (Bemerkungen über die Verbreitung der Hühnerhabichte in der Ostpaläarktis.) 1955. G. P. Dementiev. *Die Vogelwelt*, **76**(5): 161-164. Examination of 750 skins from Russian museums leads Dementiev to conclude that more work on breeding ranges and movements of Goshawk subspecies is urgently needed. Old Central European Goshawks tend to "imitate" the plumage of those from farther North.—Frances Hamerstrom.

PHYSIOLOGY

44. The Natural Termination of the Refractory Period in the White-Crowned Sparrow. D. S. Farner and L. R. Mewaldt. 1955. *Condor*, **57**(2): 112-116. On the basis of experiments showing increases in testicular weights and tubular diameters in response to 15-hour daily photoperiods, the authors conclude that the refractory period in male White-Crowned Sparrows *(Zonotrichia leucophrys gambelli)* reaches its termination in the vicinity of Pullmann, Washington during the last 2 weeks in October and the first week in November. Some individual variation was noted. No essential differences were observed between the reaction of first-year and adult birds. Variable molts were usually induced in both refractory and nonrefractory individuals.—J. C. Dickinson, Jr.

45. Temperatures during the Development of Birds in Arctic Nests. Laurence Irving and John Krog. 1956. *Physiological Zoology*, **29**(3): 195-305. Nest temperatures recorded during incubation in seven species of birds at Anaktuvuk Pass, Alaska (lat. 68°19′ N.) are within the same ranges as those for similar species in temperate climates. "The embryos develop in essentially a homoiothermous state maintained by the well-regulated behavior of their parents during incubation. . . . the temperature maintained in nests by parental behavior does not vary in relation to weather and is not visibly related to climate." This continues through the nestling period while "the young birds warm from the temperature of incubation to approach adult body temperature when they leave the nest. Growth proceeds at temperatures which are actually more stable than in the bodies of adult birds."

Though the nestling stage in Fringillids appears to be about 10 percent shorter in high latitudes than in temperate regions, "It has not been shown that brooding temperature affects the shortened arctic period of nestling life. In comparison with the circumstances of growth in temperate regions, prolongation of arctic daylight or daily feeding is much greater than the reported shortening of arctic nest life." The authors conclude "The stable, warm temperature for early avian development is common to all climates, and it is maintained through an equally common prescription for temperature regulation by parental behavior."—O. L. Austin, Jr.

FOOD
(See also Numbers 20, 21, 22, 28, 31, 33)

46. Food Habits of the King Rail in the Arkansas Rice Fields. Brooke Meanly. 1956. *Auk*, **73**(2): 252-258. Field observation and the analysis of 118 gizzards provide the basis for this study. During the cooler months the rails were observed to feed in the network of rice-field canals and natural drainage. The birds moved into the rice fields during the summer. Of the food taken 79 percent (volume) was animal. Crayfish were the principal item of animal food while cultivated rice seeds were the dominant plant item.—J. C. Dickinson, Jr.

PLUMAGES AND MOLTS
(See also Number 44)

47. Albinism Related to Age. R. M. Band. 1956. *British Birds*, **49**(4): 153-154. An adult male Blackbird *(Turdus merula)* in normal plumage was trapped in November 1950 and in the following springs and summers until 1954. In October 1955 its head was completely bald and there were flecks of white over most of its plumage. In December its moult had been completed; "there were considerable patches of white over most of its plumage, particularly the head."—M. M. Nice.

48. Contribution to the Embryonic Ptilosis of Some Passerines. (Beitrag zur embryonalen Pterylose einiger Nesthocker.) D. Burkhardt. 1954. *Revue Suisse de Zoologie*, **61**(4): 551-633. A detailed study, illustrated with many sketches and including 16 tables and 4 pages of bibliography. Table 13 shows in regard to 44 orders and families whether chicks are precocial or altricial, and whether they hatch with ample down, sparse down, or no down at all. Table 14 lists the presence or absence of down in many genera of parrots and passerines, while table 15 specifies the tracts in which down is present in 130 species. The number and position of the neossoptiles vary from species to species and even within a species. An admirable contribution.—M. M. Nice.

PARASITES AND DISEASES

49. A Pox Virus of the Slate-Colored Junco. C. Brooke Worth. 1956. *Auk*. **73**(2): 230-234. This paper reports a demonstration of the viral etiology of "foot-disease" in *Junco hyemalis*.—J. C. Dickinson, Jr.

SONG
(See also Number 26)

50. The Monotony-Threshold in Singing Birds. Charles Hartshorne. 1956. *Auk*, **73**(2): 176-192. The author comments, in conclusion, that his views may seem "anthropomorphic" (quotes his) to some readers. I am in complete agreement. Such phrases as "will avoid using," "if he is attending to what he is doing," "The bird avoids immediate repetition," "he hastens on," "Symptomatic of his concentration," "That a creature which is satisfied by small or poorly defined contrasts *within* its basic song-pattern will feel less need of variation," "and avoided repeating," abound. An abundance of objective data are treated to subjective interpretation from which the author concludes that "Song-development exhibits a trend toward unity in variety, i.e., beauty, which is to be expected if human nature is a further unfolding of tendencies pervading all life." All of the foregoing comes about as a result of the deduction that a bird which sings the same song over and over will have marked pauses between outbursts, while more versatile songsters will sing without pauses. The author adequately documents his obervations that birds with a limited repertoire do pause between songs for longer periods than do those which have less limited abilities.—J. C. Dickinson, Jr.

51. Variation In Carolina Wren Songs. Donald J. Boror. 1956. *Auk*, **73**(2): 211-229. The use of the tape recorder and its ally the audiospectrograph is beginning to open another apect of avian biology to solid documentation. No longer does the lack of "perfect pitch" necessarily hamper the investigator. Bird song today may be studied by a deaf-mute. The author analyses 71 song series and discusses (and pictures) singing behavior, song length, types of notes, frequencies and patterns of song. Of interest is the fact that Florida birds have a higher singing rate than Ohio birds. The songs of Florida birds also average slightly longer than those recorded in Ohio. Ornithologists should look forward to seeing additional studies of this type.—J. C. Dickinson, Jr.

52. On the Song of the Linnet (*Carduelis cannabina* (L.)). H. Poulsen. 1954. *Dansk Ornitholgisk Forenings Tidsskrift*, **48**: 32-37. Two male Linnets, hand-raised from the age of a week and kept from hearing other birds, started to sing loudly in February; they sang alike but differently from wild birds. Their song was "much shorter, consisting of fewer notes uttered in a much slower rhythm. The pitch and the timbre seem to be innate but the rhythm and the melody are not innate; only one phrase—the crowing—is completely innate." After they had sung their innate song for about two months they were put together with a normal Linnet and a Canary, but after a month "they were still singing their innate song."—M. M. Nice.

53. Song Output of Unstimulated Skylark. Noble Rollin. 1956. *British Birds*, **49**(6): 218-221. The all-day singing of 2 male *Alauda arvensis* was recorded on the Inner Farne Island, Northumberland, on April 18 and 21, each bird having been the sole singing Skylark at the time and thus unstimulated by territorial rivals. The first bird sang for a total of 4½ minutes, the other for 46 minutes. The author compares these figures with results he obtained on another Skylark: 68½ minutes in April, 47 in May, and 181 in July.—M. M. Nice.

BOOKS AND MONOGRAPHS

54. The Migration of Birds. (Les Migrations des Oiseaux.) Jean Dorst. 1956. Payot, Paris. 419 pp., 94 text figs. 1500 francs. This is a gratifyingly comprehensive and up-to-date survey covering all the important aspects of bird migration. Here are the chapter headings: Ancient explanations of bird migration; Methods of studying migration (contains an interesting account of major European banding programs); Migration in Europe and Western Asia; in North America; in the Australian region; in the intertropical region; of sea birds; Mechanics of migration; Bird invasions; Hibernation in birds; Physiological regulation of the migratory impulse; Orientation problems in migrant birds; Origin and Evolution of Migrations.

The author has brought a vast amount of material together within the covers of a single book, and has balanced his coverage nicely. As comprehensive a survey as this cannot possibly be exhaustive in all aspects of so vast a subject, and specialists are certain to find the treatment of their own particular fields skimpy in spots, and will be able to point out flaws and errors. I find a number of inaccuracies, for instance, in the accounts of the migrations of the Arctic and Common Terns. (Perhaps I read those pages hypercritically because Dorst overlooked my maiden paper on the Arctic Tern (Bull. N.B.B.A., 1928: 121) though he is not the first to ignore it.)

These petty faults detract very little from the book's general usefulness. Each chapter contains a helpful, if not exhaustive, bibliography for those who wish to pursue the subject further and to consult original sources, and the many maps and diagrams throughout the text enliven it considerably. Even for those who do not read French, this is one of the best source books of general information on migration yet published.—O. L. Austin, Jr.

55. Bird and Butterfly Mysteries. Bernard Acworth. 1956. Philosophical Library, Inc., New York. 303 pp., $7.50. This extraordinary book, subtitled "The Truth about Migration," is the work of a retired Royal Navy officer who is credited in the publisher's blurb on the dust jacket with having an "inquiring

and highly original mind." Original may not be the proper word, for in the course of his incredible dissertations the author not only proves to his own satisfaction that all evolutionists from Darwin on are in error, but also casts grave doubts on Einstein's theory of relativity and characterizes Newton as "something very near a charlatan."

Part I of the book deals with bird migration. Evidently a partly re-written version of an earlier book, *This Bondage*, published in 1929, it includes no references to work of the past 25 years except for a few notes of observations which seem to support the author's ideas. Much space is used to refute statements made by "distinguished ornithologists" who refused to take the author's theories seriously in 1927 and 1928. These include an "anonymous but presumably authoritative writer" who contributed an article to the London *Times*.

In his discussion of bird flight Acworth starts with the fact, which has sometimes been ignored by ornithologists, that the path of a bird flying over the earth's surface is the resultant of the bird's motion through the air and the movement of the air in which it is flying. On this firm foundation he builds an unbalanced, illogical structure, bound together by chains of circular reasoning and propped up by fallacious assumptions, which purports to "prove" a great many things about bird flight and bird migration which are not borne out by observation. The kindest possible appraisal of Captain Acworth's theories of migration is that they might be true if birds acted in the way he thinks they do and if they flew in an atmosphere in which there was no turbulence and in which the only winds were the prevailing winds of the climatic charts. But his theories do not hold in the imperfect real world in which ornithologists must work.

Part II is a detailed restating of the author's preposterous thesis that cuckoos are hybrids between the male cuckoo and the female foster parent, which he still maintains stoutly despite all evidence to the contrary. Part III on "Butterfly Migrations and other Phenomena" I had neither the time nor inclination to read.—William H. Allen.

NOTES AND NEWS

The 1956 volume (208 pages) was the longest since 1949, and we hope to make 1957 longer yet. A modest but steady rise in our circulation makes an increase financially possible, provided we can get enough good papers. Though a number of such papers have been received in recent months, we can still offer early publication.

The April issue will contain a very long paper on the Arctic Tern by Dr. Oscar Hawksley, who worked with the species at Machias Seal Island, off the coast of Maine.

The annual meeting of the Northeastern Bird-Banding Association, held on September 29, 1956, at Drumlin Farm in South Lincoln, Mass., was highly successful, with an attendance of over 90, including many newer banders. It is probable that the 1957 meeting will also be held there, as the facilities are outstanding and the location will be even more convenient after the Massachusetts Turnpike is opened.

Readers are reminded that the Association is now selling Japanese mist nets. For details, write to E. Alexander Bergstrom, 37 Old Brook Road, West Hartford 7, Conn.