

intensive trapping of birds has been done, a high return percentage was obtained: in the Oka-Terras reserve up to 30 percent of the Pied Flycatchers have been retrapped; in Latvia, with the same birds, up to 55 percent.

Of some interest are data about the longevity of some species, obtained by banding. Some of them are: *Bucephala clangula* 17 years, *Anas platyrhynchos* 16 years, *Anas crecca* 20 years and *Plegadis falcinellus* 20 years.

There are now in use 12 types of bands (No. 1 to 12) of aluminum, three types: A, B, E are made alternatively in three colours. The text of the band is: in the first 8 types "Soobschi Bjuro Kolc. Moskwa," then the type (A, B, C, etc.) and number. In English the text of bands means about "Notify the Bureau of Banding, Moscow." Two smaller types hold only the text "Soobschi Moskwa," type and number, while the smallest two types hold only "Moskwa," type and number.

The banding in the Soviet Union now includes about 300 species of birds.

LITERATURE

RYABOV, B. F. 1957: The status and tasks of bird banding in the USSR. (Russian). Trudy II. Pribaltijskoy Ornitol. Konferen. [Proceedings of the 2nd Baltic Ornithological Conference.] Akademia Nauk, Moscow 1957, p. 412-421.

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RECENT LITERATURE

BANDING

(See also numbers 13, 14, 35, 53)

1. The Ringing Scheme, 1956. Robert Spencer. 1957. *Bird Study*, 4(4): 221-223. "An autumn passage of notable volume and variety, the impressive debut of mist nets, the institution of ringer's permits and an increase in the number of active ringers:—these were some of the features which helped to make 1956 a very successful and important season. The total number of birds ringed, nearly 145,000, was a big increase on the figure for 1955, and at 4,808 recoveries were up by over 15%."

"Mist nets, the thin nylon nets imported from Japan, made their first appearance in January and it is probable that about two hundred were in use by the end of the year. Their use was carefully considered by the Bird Ringing Committee and the Bird Observatories Committee, and experience with them left no doubt as to their value. It is clear, however, that their correct use necessitates training, and a measure of aptitude, on the part of the users, and the Bird Ringing Committee requires ringers not to allow nets out of their care until they are satisfied that the recipients have had enough experience."—O. L. Austin, Jr.

2. Report on Bird-Ringing for 1956. Robert Spencer. 1957. *British Birds*, 50(11): 449-485. "A record total of 144,734 birds was ringed in 1956, a fair breeding season and an exceptionally good early autumn passage no doubt being important contributory factors. For the first time the total of birds trapped in a year exceeded 100,000 and at 40,069 the number of nestlings ringed was also a record." The "Selected List of Recoveries" covers 26 pages. Maps are given showing recoveries of Teal (*Anas crecca*), Lapwings, (*Vanellus vanellus*) and Blackbird (*Turdus merula*). A Cormorant (*Phalacrocorax carbo*), banded in the nest June 13, 1939, was trapped in July 1956, 50 miles northwest of its place of hatching.—M. M. Nice.

3. 7th Annual Report of the Ornithological Society of New Zealand Ringing Committee, for the Year Ending 31 March 1957. F. C. Kinsky. 1957. *Notornis*, 7(5): 123-135. The 23 banders active during this period banded 5,853 birds of 29 species, a record year for New Zealand "mainly due to Mr. F. Abernathy's enthusiastic and admirable work done in ringing petrels at sea from a fishing vessel." He is credited with banding 2,437 birds of 7 species, and I still wish he would describe in print just how he catches them. The 362 "recoveries" reported during this period, for which full data are given, are also claimed as a record, but a large proportion of them are actually returns in the standard terminology. High in interest among these are the 15 *Notornis* "seen again where ringed from within a few months to over 4 years after ringing" of the 30 banded in Takahe Valley and Point Burn during 1952, '54, '55, and '57.—O. L. Austin, Jr.

4. Bird Banding in Finland in 1954. (Die Vogelberingungen in Finnland im Jahre 1954.) Ilmari Välikangas and Göran Nordström. 1957. *Memoranda Societatis pro Fauna et Flora Fennica*, 32: 21-62. In 1954 the Finnish program of Helsinki University's Zoological Museum banded 21,995 birds (against 14,830 in 1953) of 147 species. Leading the list are 3,240 *Parus major*, 1,939 *Sturnus vulgaris*, 1,347 *Muscicapa hypoleuca*, and 915 *Larus ridibundus*. Outstanding are the unusually large number of hawks, owls, and waders handled. These are reflected in the returns and recoveries, data for 504 of 67 species being given.—O. L. Austin, Jr.

5. Bird Banding in Finland in 1955. (Die Vogelberingungen in Finnland im Jahre 1955.) Göran Nordström. 1957. *Memoranda Societatis pro Fauna et Flora Fennica*, 32: 62-98. In 1955 the Finnish banders raised their total bandings to 24,962 birds of 149 species. This list gives the data for 572 returns and recoveries among 67 species.—O. L. Austin, Jr.

6. Results of the ringing investigations instituted by the Royal Museum of Natural History, Leiden, 52 (1955), 2. (Resultaten van het ringonderzoek betreffende de vogeltrek, ingesteld door het Rijksmuseum van Natuurlijke Historie te Leiden, XLII (1955), 2.) J. Taapken. 1957. *Limosa*, 30(4): 201-223. As usual, Starling (*Sturnus vulgaris*) recoveries dominate this list, some six pages of them this time, swelling the mass of raw data already accumulated on this species and still awaiting analysis. Noteworthy among the Netherlands records presented here are two Herring Gulls (*Larus argentatus*) found breeding at the ages of 21 and 22 years in the colony where they were banded as chicks, and a 24-year-old Sandwich Tern (*Sterna sandvicensis*) found dead in Senegal, West Africa.—O. L. Austin, Jr.

7. The Goteborg Natural History Museum's Banding of Migratory Birds in 1956. (Göteborgs Naturhistoriska Museums Ringmärkningar av Flyttfåglar under 1956.) Viking Fontaine. 1957. *Särtryck av Göteborgs Musei Årstryck*, 1957: 9-28. In 1956 no less than 133 cooperators with the Goteborg Museum managed to band a grand total of 3,681 birds of 132 species. Nobody in the program seems to be working very hard at it. The largest number banded by any one person was 504, and only five cooperators banded more than 100. Leading the list of species banded is the Starling with 326, followed by the Pied Flycatcher with 250, and the Common Tern with 223. As usual the list of *återfynd* is so cluttered with repeats and returns of little or no significance and omits so much data of importance, such as age at banding and how recovered, that it is difficult to find the few fairly important ones. Among these are the recovery of a 9-year-old Rook (*Corvus monedula*) and a 10-year-old Buzzard (*Buteo buteo*).—O. L. Austin, Jr.

8. Results of Bird Banding in Belgium in 1956. (Resultats du Bagueage des Oiseaux en Belgique (Exercice 1956).) R. Verheyen. 1957. *Le Gerfaut*, 47(3): 209-236. Lists the returns and recoveries from some 70 species received in 1956. Though the numbers banded are not given and no estimate of percentages is possible, the large numbers of recoveries of passerines and other (to us) non-game species suggests the hunting pressure these birds must withstand in Europe.—O. L. Austin, Jr.

9. Recoveries of Banded Red-tailed Hawks. Amelia R. Laskey. 1957. *Migrant*, **28**(3): 39-40.—A *Buteo jamaicensis*, banded in Nashville, Tennessee, Mar. 20, 1943, was shot in Illinois, Oct. 26, 1943; another banded in Nashville Sept. 28, 1956, was killed the following January in Mississippi. A third, banded near Duluth, Minnesota, Oct. 8, 1956, was killed in Nashville Dec. 6, 1956. Mrs. Laskey has banded 6 nestling Red-tails. She has kept one Red-tail, injured as a first year bird by a gunner, since Jan. 27, 1947; on Mar. 9-10, 1957 this bird laid 2 eggs. "Red-tailed Hawks are very gentle and readily become tame."—M. M. Nice.

MIGRATION

(See also numbers 35, 52, 53, 59)

10. Radar as an Instrument of Bird Migration Research. (Radar als Hilfsmittel der Vogelzugforschung.) Ernest Sutter. 1957. *Der Ornithologische Beobachter*, **54**(3/4): 70-96. Radar has been repeatedly suggested in this country as a means of studying the bird migration that takes place beyond reach of the unaided eye. But, since conventional radar equipment cannot be depended upon to return echoes from anything as small as a passerine bird and since such birds make up the really elusive part of migration, the tendency has been to think in terms of specially designed "birdars," so costly that they have never proceeded beyond the planning stage; and radar data involving American migrants have been largely limited to scattered and more or less accidental recordings. Meanwhile in Switzerland, Dr. Sutter and his associates, using standard radar apparatus at the Zurich-Kloten airport, have overridden the theoretic difficulties. The present paper discusses the general aspects of radar as an aid to bird migration research and reports on the results of the diurnal phases of work done from October 7 to 22, 1956.

The key to Sutter's success lies in the ability of ordinary search radar, operating on a wave length of 10 cm., to pick up *flocks* of passerine birds even when the individuals themselves may be presumed too small to return an echo. By carefully comparing the pictures on the radar screen with the simultaneous records of field observers stationed in the vicinity, he has been able to identify specific radar echoes with specific flocks of migrants seen in the sky. Though the exact sensitivity threshold of the apparatus used has not yet been determined, it is now definitely known that a flock of as few as 20 birds as small as finches will return a distinct signal. With the settings employed, the radar screen presents a circular map of the surrounding terrain within a radius of 10 nautical miles of the transmitter. Flocks of migrants crossing this area show up on the dark background as moving points of light, reproducing a view of migration so unprecedented in sweep that the eye can scarcely assimilate it. Accordingly, events on the screen are permanently recorded by robot camera with alternating exposures of 12 seconds and one to three minutes. During the shorter interval, the moving flocks register as discrete dots that permit an accurate count of their number. During the longer exposure, they photograph as streaks that reveal both their ground speed and flight direction. Because of topographical interference and the technical peculiarities of radar, however, the echoes do not show up equally well over the whole field. The area immediately surrounding the transmitter is dead space, yet flocks headed toward or away from this area return stronger signals than groups following other courses. Search radar gives no clue to the altitude at which the migrants are flying, but at Kloten their vertical distribution was on occasion sampled independently by precision approach radar.

In spite of its failure to tell one what kind of birds are passing, or even exactly how many, the new technique has already yielded results that show its enormous potential. Sample plottings of flight elevations for four dates, while still too few to support broad generalizations, forecast new insight into the effect of changing conditions on the levels at which migrants fly. They show that on one morning the migration was divided between two distinctly separate strata, above and below a layer of mist. The flight speeds recorded during the investigation average 27 statute miles per hour and give welcome factual backing to the speculative estimates of 25 to 30 m.p.h. that has been used in this country in various evalua-

tions involving small birds. In the present study, the figure has furnished a way of ascertaining the number of passing flocks per half hour per 2 miles of front—a measure that is roughly equivalent in a spatial sense to the “birds per hour per mile of front” used by Lowery to express the amount of nocturnal migration. When these radar-derived quantities are plotted against time, they indicate that usually the number of birds in the sky increases during the first hour or hour and a half after dawn. Then a steady decrease sets in, and by 1 p.m. migration has virtually ceased.

A large part of the research was devoted to an attempt to check the validity of the radar data against concurrent observations at several outdoor watching posts. When results were evaluated, it was the field work that seemed to suffer by the comparison. Even during hours when conditions for sight observation were ideal, the number of echoes on a section of the radar screen corresponding to a 200-meter circle centered on the watching post substantially exceeded the number of flocks actually observed in the air. And the pattern of hour-to-hour variation in the recorded volume of migration was much more consistent from date to date as seen by radar than as seen in the field. The field values tended to reach a peak later in the morning than the radar values, but there was considerable variation not only from day to day but also from station to station.

It is unlikely that the Zurich-Kloten radar is especially well-adapted to the study of bird migration. Certainly more efficient equipment could be constructed. But it is precisely because Sutter has worked with a type of installation already in wide use around the world that his discoveries and his superbly documented account of them have such exciting significance. He has blazed a trail that we on this continent might profitably follow.—R. J. Newman

11. Radar Observations of Nocturnal Bird Migration. (Radar-Beobachtungen über den Verlauf des nachtllichen Vogelzuges.) Ernest Sutter. 1957. *Revue Suisse de Zoologie*, 64(17): 294-303. This report, the first of Dr. Sutter's papers on his radar researches to appear in print but the second in development sequence, deals briefly with data secured at night during the investigations described above (see No. 10). Readers of the preceding review familiar with Lowery's telescopic studies of birds passing before the moon may have wondered whether the radar technique would work at all at the very time when it is most critically needed—after dark. Lowery's findings, it will be recalled, indicated that in spring in America migrating passerines must be rather uniformly distributed in the night sky, not bunched in flocks of the sort that returned satisfactory radar echoes at Kloten by day.

Once again bypassing theoretic difficulties, Sutter has obtained impressive results. On the average, his nocturnal radar pictures actually reveal a considerably higher number of echo points than the photographs taken in daylight. The points are, however, much smaller and much less distinct and thus are consistent with the idea that night migrants tend to be fairly evenly dispersed in the air space, without much compact grouping into flocks. The major conclusion so far drawn from the nocturnal radar data concerns those apparent changes in the volume of migration that Lowery has called its “nightly temporal pattern.” When counts of bird silhouettes seen against the moon have been adjusted for theoretic changes in the size of the observation space, they have typically shown a progressive hour-to-hour increase until 10 or 11 p.m., then gradually dropped off to a predawn minimum. This trend bears a disturbing resemblance to the curve obtained by plotting the correction factors to which the raw data have been subjected, and doubts that the temporal pattern of migration derived in this manner is entirely real have been aggravated by the failure of flight-call counts to conform to that pattern. Reassuringly, Sutter's histogram for the night of October 11-12, 1956, based on the frequency of radar blips, duplicates the curve of average hourly space-corrected lunar counts with amazing fidelity. It is true that the radar results for seven other nights include some striking variations. The graphs for the nights of October 15-16 and 21-22, for example, are almost perfect mirror images of one another, the former with the bulk of migration *before* midnight, the latter with the most birds *after* midnight. Yet it is evident by inspection that, if all these radar data were averaged hour by hour, the composite curve would closely resemble the pattern of hourly means based on birds passing

before the moon. Since Sutter has obtained such similar preliminary results using an utterly different approach, it would seem that Lowery's temporal pattern must be something more than a pure mathematical illusion; but this is not to say that systematic nightly variation in the total number of birds in the sky is now an incontrovertibly established fact. There are alternative explanations of the observed phenomena that still have not been completely eliminated.

All known methods of studying bird migration combine serious elements of uncertainty with their unique virtues; and it is only by integrating several methods that one can hope to obtain real proof of an hypothesis. Well aware of this fact, Sutter and his associates planned to resume their studies of migration in the autumn of 1957, using search radar, landing radar, telescopes pointed at the moon, and flight-call counting simultaneously. When the results of this multiple investigation have been analyzed the area of doubt surrounding matters like the time of the night when most birds fly should be considerably reduced. It may well have narrowed to the vanishing point.—R. J. Newman

12. Bird Mortality in Georgia, 1957. David W. Johnston. 1957. *The Oriole*, 22(4): 33-39. A compilation of reports of bird kills by television and radio towers, ceilometer beams, and lighthouses at nine localities in and adjoining Georgia, listing in table form by species and place 4,189 casualties of 78 species, most of them during migration in early October . . . "the incidents in 1957 involved relatively fewer birds killed at ceilometers and more at tall towers when compared with the record for 1954. (This fact is not attributable to color filters, supposed to be placed over the ceilometers.) Species-wise, we still see a preponderance of thrushes, vireos, warblers, and some finchids, but the percentages are somewhat different from those recorded in 1954. This point simply emphasizes the need for more data from year to year and from locality to locality."—O. L. Austin, Jr.

13. Notes on the Swallow on its Wintering Ground. (Notes sur l'Hirondelle de Cheminee, *Hirundo r. rustica* L. dans son Quartier d'Hiver.) A. F. deBont. 1957. *Le Gerfaut*, 47(2): 127-133. (Flemish summary.) Describes the activities of Swallows passing through and wintering in the Belgian Congo, with notes on their molts. A dam built on the Kipopo River near Elizabethville in 1951 created a lake with reed vegetation along its shores where the migrating and wintering Swallows now spend the night. Flocks of 100 to 200 birds arrive with the first rains of the season in September and October, stay only a night or two, and then move on presumably farther south. After November the numbers of birds sleeping at Kipopo starts to increase with the arrival of the birds wintering there. By January 1956 the author estimated 4,000, by February some 10,000, and the numbers reached 20,000 before the birds left for the north early in April.

During the winter of 1954-55 he managed to catch and band 245 *Hirundo rustica* at night by hand in the reeds; one he banded 10 April was reported 47 days later in Yugoslavia, and he caught eight (3.2 percent) of them on their return to Kipopo the following winter. In 1955-56 improvements in technique permitted him to band 1,514 Swallows, five of which were reported from Europe during the following summer, 1 in Czechoslovakia, 1 in Hungary, 1 in the Crimea, and 2 in the U.S.S.R. This is indeed a phenomenal recovery percentage for banded Swallows. It suggests that birds that breed in temperate latitudes may produce more significant migration data if banded on their wintering grounds (if they can be caught there in quantity) than if banded on the nesting grounds.—O. L. Austin, Jr.

14. Notes on the Seasonal Deployment of the Belgian Population of the Tree Sparrow. (Over de Verplaatsingen van de Boommus, *Passer montanus* (L.) in en Door België.) R. Verheyen. 1957. *Le Gerfaut*, 47(2): 161-170. (From the French summary.) Analysis of some 250 banding returns and recoveries shows that the Belgian population of Tree Sparrows is largely sedentary. Nevertheless about one-quarter of the population moves erratically each winter within a radius of some 400 kilometers. Only two Belgian birds have been recovered at greater distances: one banded 22 November 1952 was taken the following 12 January in Bordeaux, 725 km. southwestward; the other, banded 9 October

1955, was taken 28 November 1956 some 1200 km. south-southeastward in Italy. The map of the recoveries shows the birds' movements to be oriented largely northeast-southwest. Each spring adults reoccupy their nesting territories of the previous year, and young birds return to their natal region to breed. The "average age" (for whatever it proves) of 47 recoveries of birds banded in the nest was 9 months. Two birds reached ages of 5 and 6 years, and one at least 10 years.—O. L. Austin, Jr.

POPULATION DYNAMICS

(See numbers 12, 14, 19, 38, 47)

NIDIFICATION AND REPRODUCTION

(See also numbers 33, 44, 47, 55)

15. Incubation in the Thick-billed Nuthacker *Nucifraga c. caryocatactes* (L.). P. O. Swanberg. 1956. Bertil Hanström; Zoological Papers in Honour of His Sixty-fifth Birthday: 278-297. Experiments showed that incubation in this species starts with the last egg and lasts 18 days. Contrary to the custom of corvids, the male incubates during about two-thirds of the daylight hours. Skutch (*Ibis*, 1957, **99**: 91) states: "Among passerines there appears to be little correlation between incubation in the male and his possession of a brood-patch. Some males which regularly incubate lack it, whereas others which fail to incubate develop it." The male nuthacker develops as large an incubation patch as the female, and in one case developed it even earlier. Both birds were caught "one or two days before the beginning of the nest building and 12 days before the first egg was laid," the male's abdomen was 25% bare, the female's 4-5%. Seven days later the male's patch had reached the normal length and width, while the female's had reached full length but only half full width.

"The winter-stores of the thick-billed nuthacker are of vital importance for the mates in the incubation time (Swanberg 1951), and the female alone knows its own stores. Hence it is easily understood why the female, contrary to the common habit of other *Corvidae*, is not fed by the male and has to leave the nest for long periods several times every day for feeding. These circumstances and the wintery temperature conditions in the breeding season make the ability of the male to perform a satisfactory incubation highly important."—M. M. Nice.

16. Observations on Faithfulness to Territory and Mate in Curlews. (Beobachtungen zur Revier- und Gattentreue des Brachvogels (*Numenius arquata*)). Otto v. Frisch. 1957. *Zeitschrift für Tierpsychologie*, **14**(2): 231-232. Of 6 breeding male Curlews and 1 female banded in 1955, 4 of the males and the female returned in 1956, the males taking up their former territories. Upon first seeing the author and thus long before they had nests or young, these birds gave warning cries, remembering him from the previous year. Two birds known by plumage characters have nested together 3 years. Another observer (J. Heim, 1955) reported Curlews migrating at a height of 100 meters, one of them calling loudly; it was answered by one of 4 Curlews on the ground, whereupon it dropped directly to this particular bird and stayed close by its side.—M. M. Nice.

17. Observations on Ruby-throated Hummingbirds. Albert F. Ganier. 1957. *The Migrant*, **28**(3): 36-39. A review of the occurrence of *Archilochus colubris* in Tennessee. It is sad to read: "The incubation period is said to be twelve days, which is the same as for many other small birds." It has been proved time and again that incubation in this species lasts 16 days.—M. M. Nice.

18. Immature Bluebirds Help Care for Second Brood. Muriel B. Monroe. 1957. *Migrant*, **28**(3): 40.—In late July in Knoxville, Tennessee, several immature *Sialis sialis* were noted feeding the younger brood in the nest box and also removing excreta; during 4 days they appeared to be giving 50 percent of the feedings. Such behavior has been reported several times; these young birds seem to have been especially zealous.—M. M. Nice.

19. Population Structure in Salt Marsh Song Sparrows. Part II: Density, Age Structure, and Maintenance. Richard F. Johnston. 1956. *Candor*, 58(4): 254-272. This second part on the population ecology of the Song Sparrows, *Melospiza melodia*, inhabiting the salt marshes of the north part of San Francisco Bay, California, treats demographic considerations. The birds nest in territories strung out one by one along tidal sloughs. Mean territorial length varied from 130 to 170 feet. Allowing a 30 foot width, there are about 10 territories per acre of suitable habitat. Song Sparrows were not resident in portions of marshes totally grown to short *Salicornia*. Breeding density was found to vary directly as the preceding year's productivity.

Eight to nine eggs per year per pair were produced in two to three clutches. Mortality calculated from the day the eggs were laid was found to be about 26 percent for days 0 to 13 (in the egg); from hatching, 30 percent for days 14 to 23 (in the nest); from leaving the nest, 80 percent for days 24 to 365; and 43 percent per year after 365 days. Mortality factors included predation, high tide water, desertion, infertility, embryonic death, and storms.—L. Richard Mewaldt.

20. Observations on the nesting activity of the Hedge Sparrow. Beobachtungen zum Brutablauf der Heckenbraunelle.) G. Wolff. 1957. *Ornithologische Mitteilungen*, 9: 190-192. The author reports on a second nesting of the Hedge Sparrow (*Prunella modularis*) in his rock and shrub garden in Schötmar from the start of nest building until the departure of the young. The nest was placed at a height of one meter in thick ivy growing around a stone column which was capped by a carved stone Buzzard. Nesting material consisting of plant stems, rootlets, and moss were brought by both sexes, although the female made five or six trips for each one by the male and did all of the building. The male sang intermittently from the top of a large rock or from the Buzzard's head. Building activity continued throughout the day except for an hour and a half at noon but was diminished in intensity in the afternoon. The nest was begun on 31 May and completed on 5 June. An egg was laid on four successive days between 8 and 9 a.m. starting on 6 June. On 22 June the first young hatched at 7 p.m. Since incubation started after the last egg was laid (10 June), the author calculates the incubation period as 12½ days. The author does not state when the other eggs hatched. During the incubation period the male was rarely seen. Both parents fed the young; fecal sacs were carried away. All of the young (the number hatched is not stated but it may be assumed that all four eggs did hatch) left the nest between 10 and 11:30 a.m. on 3 July. The nestling period was thus 11½ days. Shortly thereafter, the male who had been silent during the nestling period again began to sing.—R. O. Bender.

21. Double brood of the Pied Flycatcher (*Muscicapa hypoleuca*). (Doppelbrut des Trauerschnäppers.) Otto Daniel. 1957. *Ornithologische Mitteilungen*, 9: 192. A Pied Flycatcher clutch of 12 eggs was found in a wood-concrete nest box in the middle of May. During the day one flycatcher, and at night two, sat on the nest. After the normal incubation period, 11 young hatched of which one was dead in the nest one day later. Three adult birds fed the remaining 10 young. Since empty nest boxes were in the immediate vicinity, the double clutch was not due to a shortage of nest boxes.—R. O. Bender.

22. Double clutches of Blue Tits and Pied Flycatchers. (Doppelgelege von Blaumeise und Trauerschnäpper.) Fritz Schmidt. 1957. *Ornithologische Mitteilungen*, 9: 192. A mixed clutch of eight eggs of the Blue Tit (*Parus caeruleus*) with three eggs of the Pied Flycatcher (*Muscicapa hypoleuca*) was found on 14 May in a nest box near Hofheim. Five Blue Tits and three flycatchers hatched. On 9 June the nest was empty. Subsequent observations including one nest box in which three flycatcher eggs were found in a nest built on top of a dead Blue Tit suggest severe competition between the two species for nesting sites. Additional evidence was found on inspecting 140 nest boxes of which 73 percent were occupied by Great or Blue Tits on 7 April. A second inspection (date not given) disclosed that 16 of these contained up to five flycatcher eggs laid on top of the tits' nests.—R. O. Bender.

23. Wire nest of the Turtle Dove (*Streptopelia turtur*). (Drahtnest der Turteltaube.) Martin Merkel. 1957. *Ornithologische Mitteilungen*, **9**: 215. This note contains a picture of a nest of which about three-quarters was rusty wire. It contained one egg and was situated at a height of 15 m in an elderberry bush. Other wire nests of this and of the Collared Turtle Dove (*Streptopelia decaocto*) are mentioned.—R. O. Bender.

24. Clutch Size in the Goldfinch. H. J. Frith. 1957. *Emu*, **57**(4): 287-288. Since its introduction into Australia less than 100 years ago, the clutch size of the European Goldfinch (*Carduelis carduelis*) "has decreased from the ancestral British figure of 5 to 3.7." The author thinks "the direct latitudinal effect, resulting in a shorter day length for food collecting which will reduce the average number of young that can be reared successfully could well be a factor in the change of clutch size. However, difference in day length is only one of many factors in which the habitat of the Goldfinch in England and central New South Wales differs, and it is unlikely that the decrease in clutch size can be attributed to the difference in latitude alone."—O. L. Austin, Jr.

BEHAVIOR

(See also numbers 16, 18, 60, 63)

25. Fishing Crows. (Fiskande kråkor.) Lars Homberg. 1957. *Fauna och Flora*, (5): 182-185. From many parts of Sweden and Norway observers have reported Hooded Crows (*Corvus cornix*) and in one instance a Raven (*Corvus corax*) in the early spring pulling up fishermen's lines set through holes in the ice and eating the fish and bait on them. Grasping the line with the beak, the birds retreat backward with it as far as they can, then walk forward *on top of the line*, thus holding it fast until they get a fresh grip for another pull, and repeat the process until fish or bait is hauled out on the ice.

I shall venture no guess as to how the crows learned to associate fish and line, nor how they came to use their own weight to keep the line from slipping. I suggest, however, that as the ice in Sweden and Norway is usually transparent, clear, and seldom snow-covered, the birds at one time or another may have had little difficulty in discovering the fish and bait through the ice, dangling from the end of the line.—Louise de K. Lawrence.

26. A Review of the Anting-Behaviour of Passerine Birds. K. E. L. Simons. 1957. *British Birds*, **50**(10): 401-424. After a brief history of the subject, in which the work of Ivor, Goodwin and Poulson are cited as the most important contributions, the author describes active and passive anting and gives an annotated list of the 20 species of passerines on the British list that have been recorded as anting, adding 4 other species that occur as vagrants from America. He discounts records on galliforms as "misinterpreted dust-bathing in ant-hills," and in woodpeckers as defense against the ants the birds were eating. He believes that anting "probably derives from preening movements" and that it may be of value in "the removal of feather parasites if present," in "the disposal of stale oil from the plumage and the general improvement of the tone of the feathers." He suggests that "anyone keen to see an anting session can deposit a large heap of active Wood Ants (plus nest debris) in a suitable spot and is guaranteed an enjoyable and fascinating time, especially if any Starlings are in the neighbourhood." The paper is illustrated by 8 sketches from photographs and 9 photographs.—M. M. Nice.

27. A Resumé of Anting, with Particular Reference to a Captive Orchard Oriole. Lovie Whitaker. 1957. *Wilson Bulletin*, **69**(3): 195-262. This notable monograph, by far the most exhaustive treatment of anting yet to appear, is based on a series of 80 experiments extending over 31 months on a hand-raised *Icterus spurius*, on a thorough acquaintance with the literature, as evidenced by the 11-page bibliography, and on an original method of approach, namely analysis of the characteristics of the ants used and not used. Anting is defined "as the application of foreign substances to the plumage and possibly to the skin." In active anting, the usual method, substances are applied by the bill.

while in passive anting, the bird "may 'bathe' or posture among thronging ants which invest its plumage." Ten photographs of the oriole illustrate features of active anting, and two, lent by Dr. Hans Löhrl, show passive anting. "At least 24 kinds of ants and more than 40 substitute materials have been used by anting birds." Table 3 lists 148 species of birds, 65 of them New World forms, that have been reported anting; 16 of these are non-passerine—galliforms, parrots, a Horned Owl, woodpeckers, and a woodhewer. The behavior of the oriole is described in great detail and compared with that of other anting birds.

Table 1 lists the ants that have been reported as used, only one possessing a sting, and this occurrence might have been a conditioned response after experience with spraying ants. The others are 4 species of Dolichoderinae that exude repugnatorial liquid from anal glands and 19 Formicinae that spray formic acid. The oriole used 3 species of Dolichoderinae and would not use 4 species of Myrmicinae, one possessing a powerful sting, the others weak stings. By tasting the ants offered to her bird, Mrs. Whitaker found that the accepted species produced a burning sensation on her tongue, while the unacceptable species did not. Heat-killed ants, and specimens that had been frozen for several months lost much of the burning quality and induced almost no anting. All the agents used for anting appear to have a thermogenic effect. In summer ants were more thermogenic than in winter.

Despite all the observations of many people and the experiments of a few, "the purpose of the behavior remains unknown." Mrs. Whitaker states that anting by birds obviously infested with ectoparasites appears to be extremely rare, yet it is possible that ant substances might relieve "itching caused by minute ectoparasites or cysts of endoparasites, certain species of which are known to occur in skin of the undertail region of birds." Also the oriole "appeared to derive sensual pleasure, possibly including sexual stimulation, from the thermogenic effect of the ants." Many other questions for investigation are suggested in this original and thought-provoking paper.—M. M. Nice.

28. Anting by the Grey Starling *Sturnus cineraceus* Temminck. Nagahisa Kuroda. 1957. *Tori*, 14(69): 28. (From the English summary.) A short account of the second anting record for Japan. It was performed by only one bird of a small flock of Gray Starlings the author saw in a Tokyo park at 9 o'clock on a cloudy June morning. This bird "sat upright on the grass with half spread wings and by fast movements it picked up something (ant) and lowered the head to the inside of the primaries. It was on a nest of *Formica fusca japonica* Motsukulsky and the ground was pecked. The ants were actively moving around and climbed up to the author's hand. No dead ones were found."—O. L. Austin, Jr.

29. Cormorants and Shags "Drying" their Wings. Frank Stabler. 1957. *British Birds*, 50(10): 447-448. A convincing argument that Cormorants spread their wings, not to dry them, but to balance their bodies. These birds like to rest on shore on their tarsi with their bodies upright. "This puts a strain on the crural muscles especially when there are some pounds of fish adding to the weight to be balanced. They thereupon spread their wings and trim them in the breeze so that the upright position is maintained without effort." If they spread their wings while afloat they are using them as sails.—M. M. Nice.

30. Married to a Purple Heron. (Mit einem Purperreihner Verheiratet.) Otto v. Frisch. 1957. *Zeitschrift für Tierpsychologie*, 14(2): 233-237. A young *Ardea purpurea* taken in July at about 10 days of age and raised by hand, started on Jan. 28 to court his fosterer, displaying to him, accepting twigs from him and building them into a nest, and in April made copulatory attempts. These herons do not breed until 2 years of age. By June the nesting phase had passed, although the bird remained throughout summer and fall devoted to the author and consistently hostile to all other people. Eight photographs illustrate the different types of behavior.—M. M. Nice.

31. How does the Great Tit (*Parus major*) sleep in boxes? (Wie schläft die Kohlmeise im Kasten?) Kurt Preywisch. 1957. *Ornithologische Mitteilungen*, 9: 161-162. The author undertook to determine the posture of sleeping Great Tits by examining nest boxes at night and later by substituting a glass side to a box. He found them in two positions, each illustrated by a photograph. The feet were

resting on the floor of the box in contrast to the position assumed in summer when these birds sleep mostly on twigs. He also comments that a healthy bird only defecates once each night, hence a count of feces serves to indicate the number of nights the box was used.—R. O. Bender.

32. The Social Behavior of Gulls Wintering Inland. R. A. O. Hickling. 1957. *Bird Study*, 4(4): 181-192. After studying the flocks of gulls (mostly *Larus ridibundus*, with four other species present) wintering on reservoirs in Leicestershire through two winters, the author describes the social behavior patterns associated with their feeding, resting, and roosting, and explains these activities in behaviorist terms. He considers the flocks to be organized communities in which the individuals "react strongly to the behavior of one another," but he was "unable to see any aggression which might suggest territorial behavior, and little aggression to maintain individual distance."—O. L. Austin, Jr.

33. On the displays of the Six-plumed Bird of Paradise. (Om spelet hos strålparadisfågeln, *Parotia seflata* (Pennant).) Sten Bergman. 1957. *Fauna och Flora*, 5: 186-198. The displays of this bird were studied in its native haunts in Dutch New Guinea and in captivity. The dancing place, a yard square, was on the ground under the canopy of the virgin forest. An absolute requirement was a few horizontal branches at a suitable height above it. The displays were performed mostly on the ground but also on the branches and usually in the early morning and in the afternoon.

The displays are well described and illustrated by photographs of the various poses and movements. The spreading of the long jet-black plumes falling from the breast and the sides of the bird so that they form a circle-round "skirt" around it and the black streamers ending with small round disks attached to the crown and swaying with the movements of the head are the most spectacular features. The rivalry between the males in captivity caused many interesting variations in the basic dancing routines. In the wild only one male in full plumage was observed at any one dancing place.—Louise de K. Lawrence.

ECOLOGY

(See also numbers 36, 56, 64)

34. Studies in Population Ecology of the Collared Flycatcher. (Populationsökologische Untersuchungen beim Halsbandschnäpper (*Ficedula albicollis*).) Hans Löhrl. 1957. *Bonner Zoologische Beiträge*, 2(8): 130-177. In response to generous provision of nest boxes in an 11-hectare orchard near Stuttgart, the numbers of Collared Flycatchers have markedly increased. From 1949 to 1953, 2,764 young and 1,341 adults were banded. The average clutch size was larger in early than in late seasons. Although the birds arrived toward the end of April, it was the temperature of the whole month that affected the start of laying, which thus seems to be greatly influenced by the degree of seasonal development of the entire biotic environment. A fall in temperature during nest building retarded laying.

Seventy-seven percent of the eggs laid over a 7-year period produced flying young. Most nestling losses occurred when cold weather came late in nest life (in 75 broods all young perished), and birds just recently fledged also suffered heavily in cold wet intervals. As the principal reason for the greater survival of early, larger broods, Dr. Löhrl suggests the composition of the nestlings' diet; in over 1,000 food items retrieved from early and late broods, lepidopterous larvae constituted 32.5 percent of the diet of the former and 5.9 percent of that of the latter.

Some Collared Flycatchers breed the first summer after hatching, and some not until the second year. Making a special effort to determine the ratio of birds reaching breeding maturity as yearlings among certain defined groups banded as young, Dr. Löhrl found 15 females and 25 males breeding when 1 year old, 14 females and 15 males not doing so until they were older. On the subject of the influence of their own dates of hatching on their readiness to breed during their first summer, he discovered that of 29 females banded as nestlings, the 19 that bred the following summer were all from early broods, while of those starting to breed during their second summer 6 came from early broods and 4 from

late ones. Excluding a season following a year of very low reproductive success, the percentage of first-year males among all breeding males was 37. (First-year males are distinguishable by plumage characters.) Of females banded as breeding adults, 31 percent returned the next year; 45 percent of these returned the following summer, and 46 percent of that group came back the third season after banding. Dr. Löhrl concludes that the survival rate of breeding birds is between 40 and 50 percent, and that from 10 to 15 percent of the females do not return to their first breeding places, but that the others do so for the rest of their lives. A very fine study.—Val Nolan, Jr.

WILDLIFE MANAGEMENT AND CONSERVATION

(See also numbers 41, 42, 50, 54, 60, 64, 65, 66)

35. Mourning Dove Investigations 1948-1956. Anonymous. 1957. Technical Bulletin No. 1, Southeastern Association of Game and Fish Commissioners, Columbia, South Carolina. ix-166 pp. 60 tables, 23 graphs and maps. This fine analysis of the Mourning Dove researches carried on during the past decade under state and federal auspices should go far toward justifying and furthering this important work. In view of the general inadequacy of some of the recent publications on the dove work, several of which I have been stirred to criticize severely, it is especially welcome. It presents the essential data accumulated over the years, evaluates them soundly, and draws from them a series of conclusions and recommendations that are logical, practical, and amply substantiated by and in accord with the evidence. In so doing it corrects or refutes practically all the earlier misstatements and false conclusions to which I have taken exception.

While the report unfortunately (for bibliographical purposes) is published anonymously, doubtless because, as the acknowledgements point out, the study "has been a cooperative investigation in the fullest sense of the word" and the final report the work of many men, my impression is that credit for its over-all excellence should go to George C. Moore, president of the Association that issued it, and to James W. Webb, its secretary, who prepared the manuscript for publication.

In describing the various methods that have been used to gather data, the report makes some sense for the first time out of the welter of mail carrier counts, roadside counts, plot counts, and call counts. It recognizes their faults and weaknesses, but shows how they can be used nevertheless to determine population trends, and recommends methods of standardizing and simplifying such counts. Most gratifying is its impartiality in balancing the evidence and its avoidance of bias in drawing its conclusions. Its estimates of the annual hunter kill for instance (somewhere between 4.1 and 59 percent) and of crippling losses (average 26 percent of the bag) are admittedly not accurate enough for practical application, but they are the best the available data can be made to show. Another controversial matter on which more data are needed is early fall hunting and its possible effects on breeding populations. From the evidence at hand "September hunting apparently has not had a detrimental effect on Southeastern dove population size, although it may be the main factor in the increased rate of population turnover in the Southeast."

The report makes good use of banding data for its study of mortality and of migration and movements, and finds them a valuable check on other census methods in estimating population trends. I am intrigued to find the mortality percentages determined by analysis of the 5,448 recoveries to date (70 percent first year, 55 percent annually thereafter) are almost identical to those I ventured 6 years ago from my little sample of 105 recoveries of Cape Cod doves (69 and 55 percent). Its analysis of recoveries by states "shows some evidence of three major Dove Flyways in the United States." This is certainly the correct approach, and it is unfortunate the results so far are not more clear cut, for the demonstration of such a distribution pattern would facilitate greatly administrating dove hunting and regulating the annual kill.

It strongly recommends continuing the nationwide nestling banding program, sampling production by banding both seasonally and geographically, and banding major population segments to trace movements more accurately. It suggests such improvements in banding methods as recording the totals banded by age groups

for further analysis of movements and mortality, and tracing the wing molt pattern in retrapped juveniles to supplement aging data of caged birds. Among other critical problems in need of further research, it recommends inquiries into "the effects (and extent) of illegal kill and crippling loss," and "a study of mortality factors (other than hunting) affecting the dove." One I see no mention of which would contribute greatly to the usefulness of banding data is a determination of the percentage of banded birds not reported after coming to human notice (particularly of hunters). A comparison of recovery percentages here and abroad shows something radically wrong with American reporting of banded birds. The average dove recovery rate of 3.7 percent is ridiculously low for a game bird, and far from accord with other evidence on the percentage of banded birds shot. A reasonably accurate measure of this loss would greatly enhance the value of the banding data already at hand, and if the loss could be overcome it should double or triple the effectiveness of the banding program.—O. L. Austin, Jr.

36. Taxonomy, Distribution and Habitat Utilization of New Zealand Pheasants. Kaj Westerskov. 1956. *Wildlife Publications* No. 40A, New Zealand Department of Internal Affairs, Wellington. 79 pp., ill. This is a scholarly, yet simple and readable survey of the history and status of the New Zealand pheasant population. It devotes considerable space to discussing the ancestry and affinities of the current New Zealand bird which, like the populations in England (from which the New Zealand stock came), western Europe, and North America, is the result of the crossing of at least two, possibly four recognizable subspecies. Rather than contributing more scientific names to the already overburdened synonymy of the genus *Phasianus*, the author calls this fairly stabilized hybrid simply the "game pheasant."

First introduced in 1842, "repeated importations and large-scale propagation and liberations led to the successful acclimatisation of the species in suitable areas. . . . Much of the country is unsuited to pheasants . . . and it is doubtful whether even half of the potential habitat supports pheasants in any numbers." Westerskov considers the blacknecked subspecies (*P.c.colchicus*) may be the strain "best suited to conditions here, but any attempt at this stage to create a population of a pure strain from the existing mixed population seems impossible. New subspecies of pheasants or locally adapted populations (ecotypes) may in future prove capable of acclimatising in areas which are now considered unsuitable pheasant habitat." At the same time he warns of the danger, once a pheasant population is firmly established and maintaining itself, of introducing new stock. "This pheasant would undoubtedly best be aided in its development towards complete local acclimatisation by being left alone from constant addition of new birds of different strains."—O. L. Austin, Jr.

37. Pheasant Management and Shooting in New Zealand. Kaj Westerskov. 1956. *Wildlife Publication* No. 40C, New Zealand Department of Internal Affairs, Wellington. 57 pp., ill. This "evaluation of restocking and shooting, and some suggestions for management" discusses "the economics and practical value of restocking with pheasants; the effects of shooting on pheasant numbers and the feasibility of bag limits and variations in length of open season." It contends "that routine restocking does not materially increase shooting, is far too costly considering its poor results." It suggests establishing a uniform 2-month open season throughout New Zealand and abolishing bag limits that "under present conditions serve no useful purpose." It strongly recommends protecting the hens and allowing cocks only to be shot.—O. L. Austin, Jr.

38. An Aerial Survey of the Numbers of the Cape Barren Goose in the Furneaux Group, Bass Strait. Eric R. Guiler. 1957. *Emu*, 57(3): 217-221. Describes the advantages over "more orthodox methods" of counting populations of large birds such as these endemic geese (*Cereopsis novaehollandiae*) of restricted range from a low-flying light aircraft. The author was able to survey all the small islands in Bass Strait which are the "centre of distribution of the species" and where "the greatest numbers of Geese are found" in 1½ hours. He estimated the population "at some 2,000 birds" which he does not consider "to be sufficient to warrant any relaxation of the present protection accorded the species."—O. L. Austin, Jr.

39. Functions and goals of the Hamburg City Bird Sanctuary. (Aufgaben und Ziele der Staatl. Vogelschutzwarte Hamburg.) Herbert Bruns. 1957. *Ornithologische Mitteilungen*, 9: 181-6. The German Vogelschutzwarte are somewhat different from bird sanctuaries as they normally exist here. In addition to protecting the bird life, they serve as research stations where very effective work is done in studying the ecology and biology of birds as a means of improving methods for their protection and increase. Dr. Bruns begins this paper by a review of the history of bird refuges from the time of the Egyptians and Greeks to the present, concluding with a list of the three German Bird Observatories and eight Sanctuaries. The difference between the Vogelwarte and Vogelschutzwarte is described as that between basic and applied research. One of the Vogelwarte, Heligoland, serves as the bird-banding center for Germany. After this general review, the author turns to a discussion of the work of the Hamburg Sanctuary.

The principal studies are as follows:

1. Biological plant protection. These studies have already developed methods for increasing the density of bird populations to a greater or lesser extent and have rendered old ideas on the subject obsolete. (Previous issues of *Bird-Banding* have reported many of these studies, principally those concerned with the provision of artificial nesting sites.) Since chemical control methods involve certain dangers to men and animals, biological control methods deserve serious study.
2. Defense from bird pests. The most important of these problems is that of the destruction of cherries by starlings. It is complicated by the fact that many of the starlings are wanderers from other areas where they are considered as useful and desirable and, hence, a local solution is impractical. Since optical and acoustical defense methods have proved insufficient, other studies are necessary. The unsanitary habits of wild pigeons present another problem, as does the overwhelming increase in sparrows.
3. Perception physiology and behavior research. Studies of the sight, smell, taste, and hearing of birds provide a basis for behavior research and for control of enhancement measures.
4. Cultural bird protection. Provision of suitable areas for swamp and water birds.
5. Migration on the lower Elbe. Prolonged observations at the Island of Nessrand have yielded valuable data on bird migration.
6. Avifaunistics. Systematic faunistic observations (distribution of individual species, their ecological preferences, and their behavior) have been in progress for 11 years. Systematic collection of first arrival dates have been made for 10 years.
7. Urbanization of crows, thrushes, and doves.

Public education is also an important part of the Schutzwarte activity.

—R. O. Bender

PARASITES AND DISEASES

40. Nest fauna of the Fairy Martin. P. A. Bourke. 1957. *Emu*, 57(3): 205-208. Tests in a colony of *Hylochelidon ariel* under a bank overhanging a dry creek bed "were found to support a fauna consisting of at least seven species, four of which are blood-sucking parasites, two are scavengers and one . . . is a scavenger in the larval stage but (probably) a parasite when adult." Several of these are still unidentified specifically and at least two, a Hippoboscid and a Passeromyiad, are "almost certainly undescribed. It is obvious that examination of freshly-vacated nests and co-operation between entomologists and ornithologists must lead to new and interesting discoveries."—O. L. Austin, Jr.

41. Diseases of Wild Birds, Fourth Report. A. R. Jennings and E. J. L. Soulsby. 1957. *Bird Study*, 4(4): 216-220. Lists causes of death found in 186 dead birds of 61 species autopsied. "In 28 of these the cause of death was not determined and in 87 birds injury was the immediate cause of death. Infection accounted for 26 birds and in the remaining 45 death was ascribed to a number of different causes. . . . Poisoning accounted for 17 deaths in wild birds . . .

the most common [being] yellow phosphorous which is present in some rat poisons. Poisoning due to the dressing of seed with dieldrin was also encountered." A list of endoparasites found in individuals of 37 species is appended.—O. L. Austin, Jr.

PHYSIOLOGY AND PSYCHOLOGY

42. Bobwhite Weight Gains on Different Light-Dark Cycles. Charles M. Kirkpatrick. 1957. *Poultry Science*, **36**(5): 989-993. Five groups of Bobwhite, *Colinus virginianus*, seven weeks old were placed on different light schedules for 54 days. One group was kept on continuous light while the other four were exposed to 12-hour periods of light separated by periods of total darkness of 12, 24, 30, and 36 hours. Temperature varied from 60° to 80° F. A standard grower mash and water were available at all times.

Birds in all four groups which had some darkness consumed essentially the same amount of total food during a test period. On the 12-12-hour schedule essentially no food was taken at night. However on 12-24-, 12-30-, and 12-36-hour schedules food was consumed in substantial quantity in total darkness. Weights were taken each six days to and including the 54th day. Poorest gains were made by the birds on continuous light. Best gains were made by those on the 12-36-hour schedule. In order, 12-12-, 12-24-, and 12-30-hour schedules followed in decreasing amounts of weight gained. It is suggested that darkness favored the conservation of energy. Here less energy was consumed in flight and pursuit in contests to determine peck order. The evidence indicates that when adequate food is available, the absence of light over relatively long periods does not prevent satisfactory gains in weight, and that some darkness is beneficial to growth.—L. Richard Mewaldt.

43. Nocturnal Decline in the Temperature of Birds in Cold Weather. Laurence Irving. 1955. *Condor*, **57**(6): 362-365. Body temperatures were taken by insertion of thermocouples well into the cloaca of seven species of arctic birds at Anchorage, Alaska during the winter. The species were Black Brant, *Branta bernicla*; Emperor Goose, *Philacte canagica*; Glaucous-winged Gull, *Larus glaucescens*; Glaucous Gull, *Larus hyperboreus*; Snowy Owl, *Nyctea scandiaca*; Short-eared Owl, *Asio flammeus*; and Magpie, *Pica pica*.

In winter air temperatures of -9°C to -22°C, daytime body temperatures were similar to those reported for the same species in warmer weather. Night body temperatures were from 0.9°C to 4.0°C lower than day temperatures. These findings are similar to those reported for temperate climates. It should be noted that the captive owls here tested were quiet at night and awake by day. There was no evidence the cooler night time body temperatures caused these birds to be sluggish.—L. Richard Mewaldt.

44. Relation of Growth and Development to Temperature Regulation in Nestling Field and Chipping Sparrows. William R. Dawson and Francis C. Evans. 1957. *Physiological Zoology*, **30**(4): 315-327. A fine study of nestling *Spizella pusilla* and *S. passerina* under natural conditions. Tables and charts are given on age at fledging, weights, oxygen consumption, and temperature regulation. "In the first 2 days after hatching, neither species could on its own resources remain more than 3° warmer than the environment between 15° and 38°. Both tolerated body temperature as low as 15° for 1 hour without harm . . . at 7 days both maintained body temperature essentially constant over the temperature range studied."—M. M. Nice.

45. Food Requirements and Other Observations on Captive Tits. John Gibb. 1957. *Bird Study*, **4**(4): 207-215. Describes a series of aviary feeding trials on wild-caught Great, Blue, and Coal Tits, which showed the "energy requirements of the Great Tit (body weight c. 19 g.) were greater than those of the two smaller species; but, unexpectedly, the requirements of the Blue Tit (body weight c. 11 g.) were slightly less than those of the Coal Tit (body weight c. 9 g.)." No explanation for this is suggested. Observations are also given on comparative defecation rates and on habitat preference.—O. L. Austin, Jr.

PLUMAGES AND MOLTS

(See also number 51)

46. Natal Plumages and Downy Pteryloses of Passerine Birds of North America. David K. Wetherbee. 1957. *Bulletin of the American Museum of Natural History*, 113(5): 343-436. This is a detailed study of the neossopitile pteryloses (natal down) of about 90 species of passerine birds of North America. Coupled with it are critical comments on published reports (mostly fragmentary) on these same 90 species, plus another 100 species. Another set of characteristics is here being made available to the avian systematist.

The quantitative interpretation of the neossopitile pterylae is well conceived. Numbers of neossopitiles are coupled with their mean length in each region. Regions considered present vary from four in *Sitta* to twenty-nine in *Tyrannus*. Some 74 tables summarize the findings where quantitative measurements could be made on individual species. Another 14 tables assist in tentative family synopses. Analyses of variation made on two species (*Riparia riparia* and *Telmodytes palustris*) suggest that a statistical treatment may be fruitful in cases where sufficient numbers of specimens are available. Measurements of length make it apparent that the natal down completes its elongation before the time of hatching.

Some species of Tyrannidae have the greatest number of neossopitiles and downy regions found among passerines examined. In Corvidae it is interesting to note that whereas *Corvus brachyrhynchos* and *Nucifraga columbiana* have relatively much down, *Cyanocitta cristata*, *Aphelocoma ultramarina*, and *Pica pica* are naked at hatching. *Sturnus vulgaris*, with its large quantity of down, demonstrates one of several exceptions to the alleged correlation of nudity to cavity nesting.

The broader use of neossopitile pteryloses as tools in avian systematics seems indicated. This paper does a creditable job of presenting not only a quantity of data, but also of pointing out some of the weaknesses and strengths of these data. Further such studies are certainly to be encouraged.—L. Richard Mewaldt.

47. Plumage, Age and Mortality in the Arctic Tern. J. M. Cullen. 1957. *Bird Study*, 4(4): 197-207. This paper is concerned primarily with the so-called *pikai* and *portlandica* plumages in *Sterna paradisaea* which, as the author points out, are merely particular phases in the integration between full eclipse and full nuptial plumages, *portlandica* being nearer the eclipse or immature, *pikai* nearer to breeding dress. Individuals with more or less white on the forehead, sometimes with or without dark carpal bars and whitish underparts, frequently with black or blackish bills and feet, seem to occur more frequently among breeding colonies of Arctic than among Common Tern (*S. hirundo*) colonies, where both Palmer and the Austins have given the phenomenon some attention. Cullen shows that on the Farne Islands where he conducted his Arctic Tern studies, "some but probably not all, two-year-old birds assume this plumage but that it may also be worn later in life, sometimes for one season only." He notes that such birds seldom nest, and that when they do (as one did at the Farnes) they are unsuccessful, which bears out Palmer's (1941) discovery that these birds have incompletely developed gonads. Cullen apparently feels that most such birds are immature, though he is forced to recognize that some must be older adults suffering a temporary hormone imbalance. These plumages are of course definitely not an old age feature.

Cullen's observations on the non-breeding birds at the Farne breeding grounds are most important. While he recognizes that some 2-year-olds may have nested, the youngest known nesting Arctic at the Farnes were 3 years old. He observed 5 2-year-olds that failed to pair, 7 3-year-olds, and 2 each of 4- and 5-year-olds. All these non-breeders "behaved as males," and he has "little doubt that there was a real shortage of females." He records three cases in which these extra males formed "triangular marriages" with a mated pair, in two cases assisting with the incubation, in the third with the feeding. He makes the interesting suggestion that some of our records of breeding 1- and 2-year-old Common Terns may be of such "helpers" that actually did not breed themselves.

This is entirely possible and deserves further investigation. It can be determined, however, only by intensive studies such as this of Cullen's of small popu-

lations, adequately color-banded or otherwise marked for field recognition without actual handling, certainly not by the wholesale adult trapping and banding we have pursued on Cape Cod, which allows no time for such detailed observations of individual behavior and relationships. The heavily banded Cape terneries with their high percentage of marked individuals of known age would be the ideal place for just such studies.

Cullen's population of banded Arctics of known age on the Farnes ternery showed an annual adult mortality of 18 percent, significantly lower (not higher as he states) than the 25 percent mortality our mass data show for the Common Tern. But his sample of fewer than 150 records is comparatively small, and the discrepancy, as he recognizes, may well be "due to chance."—O. L. Austin, Jr.

48. Age, Molt and Weight Characteristics of Blue Grouse. James F. Bendell. 1955. *Condor*, 57(6): 354-361. More than 350 Blue Grouse, *Dendragapus obscurus*, including 195 chicks, were collected at Quinsam Lake, Vancouver Island, British Columbia from 1950 to 1952. By October of their first year, chicks are in plumage similar to adults. They differ from adults by having shorter and narrower rectrices and by weighing substantially less. During the summer months, adult males have a mean weight of 1230 grams, compared to the 345 grams for adult females.

Based in part on banded birds of known age, it was determined that the bursa of Fabricius in adult plumage indicates a bird of 2 or 3 years of age. Older birds did not have a bursa of Fabricius. None of 5 yearling (1-year-old) males was found to breed, whereas 3 of 8 yearling females showed evidence of having bred. All yearlings possessed a bursa of Fabricius.—L. Richard Mewaldt.

49. From the bird cliff Bleiksøya in northern Norway. (Från det nordnorska fågelberget Bleiksøya.) Sten Regnell. 1957. *Fauna och Flora*, 5: 199-202. During the summer of 1952 a normally-colored Kittiwake (*Rissa tridactyla*) was observed, whose feet and tarsi were bright orange yellow. A census of the Guillemots (*Uria aalge*) revealed about 7 percent (not 50 as earlier stated) to be of the "bridled" type.—Louise de K. Lawrence.

ZOOGEOGRAPHY

(See also numbers 36, 38, 58, 59)

50. Distribution and Abundance of the Rook (*Corvus frugilegus* L.) in New Zealand. P. C. Bull. 1957. *Notornis*, 7(5): 137-161. Rooks were introduced to New Zealand in three localities between 1862 and 1873. They are now established in five places (two probably from later liberations), all "on the eastern side of the country and mostly in districts where grain is grown." The latest count showed a total of 54 separate rookeries (one of the most misused terms in our modern ornithological jargon, by the way, and I welcome this chance to use it correctly for once) in the five districts. "The Hawke's Bay population (1,242 nests counted over 300 square miles) is less dense than the Christchurch one (1,371 to 1,806 nests over 100 square miles). The Christchurch population has increased from 1,000 birds (one rookery) in 1925 to 7,000-10,000 birds (thirteen rookeries) in 1947, and then remained at about this level, but with nineteen rookeries."

Bull presents limited data on the breeding season, clutch size, and winter roosts, but his main concern is with the species' present and past status and its general ecology. He attributes the Rook's restricted distribution and slow rate of spread to the species' gregarious habits and use of traditional nesting places, and to the restricted distribution of liberations and the nature of the environment. Because of the birds' depredations to field and orchard crops, control measures are occasionally necessary. These "were applied sporadically until about 1945 and with considerable vigour and co-ordination thereafter." Large numbers were killed late in 1956 with sodium fluoracetate (1,090), but the main methods have been "shooting the birds at their rookeries and cutting down the trees used for nesting." These measures have caused "a reduction in some large rookeries, the establishment of several small new ones, and a slow increase in the breeding range of the species."—O. L. Austin, Jr.

51. Notes on the Great Black-headed Gull. (Anteckningar om svarthuvad trut.) Report 4 from Falsterbo Bird Station. Gunnar Strömberg. 1957. *Fauna och Flora*, **3-4**: 81-88. (English summary.) The appearance at the station 12 September 1956 of a Great Black-headed Gull (*Larus ichtyaetus*) led to this review of the distribution and plumages of the species. Breeding chiefly around the Lake of Asov and eastwards to Mongolia, the gull spends the winter along the shores of Indonesia, India, and northeastern Africa, and is accidental in southern Europe. The bird in question, a first record for Sweden of the species, was identified as a 3-year-old at the beginning of the molt.—Louise de K. Lawrence.

52. The avifauna of the coastland of middle Ångermanland in northern Sweden. (Fågelfaunan i mellersta Ångermanlands kustland.) Sune Andersson. 1957. *Fauna och Flora*, **5**: 161-181. In addition to detailed notes on the birds found during two summers and one spring, 1953-1955, the author discusses the influence of the local climate of southern mountain slopes upon the birds. He concludes that it is of importance to residents and to some ground-nesting passerines of more southerly distribution, which breed on small territories, e. g. the Wren (*Troglodytes troglodytes*). In the spring of 1955 a remarkable example of reversed migration occurred in early May, when a large concentration of migrants were forced back by a combination of rising land in front of them and a heavy snowfall brought on by a cold front.—Louise de K. Lawrence.

53. Evening Grosbeak Incursions for Winters of 1955-56 and 1956-57. Also Notes on 1956 Nestings in the Northeast. B. M. Shaub and Mary S. Shaub. 1957. *Jack-Pine Warbler*, **35**(4): 128-139. A useful compilation of reports for the winter of 1955-56 (in which substantial numbers appeared in the Northeast, with at least 13,000 banded) and the winter of 1956-57 (when the species wintered farther north and few were banded). Its summer range in eastern North America in 1956 was essentially similar to the range in 1954 and 1955, with reports widespread.—E. Alexander Bergstrom.

54. Photographic Studies of Some Less Familiar Birds. LXXXIV. Eagle Owl. Kai Curry-Lindahl. 1957. *British Birds*, **50**(11): 486-490. This splendid bird, *Bubo bubo*, was formerly distributed over most of Europe, but now has become rare in most countries. "The principal cause of the decrease of the Eagle Owl in Sweden has been, and still is, the relentless hunting of these birds throughout the centuries: every year many eggs have been destroyed by hunters or taken by collectors, many nestlings have been caught or killed, and the adults have been shot or constantly disturbed . . . this owl has always been considered, by hunters and game-keepers, to be a very destructive bird as far as game animals are concerned." Many of the young are raised in captivity and "sold as living decoys to be used in the hunting of crows and raptorial birds." Ironically enough, small rodents form the main part of this owl's food. In an investigation in Sweden by the author (1950), it was found: "First among the recorded food items comes the Brown Rat (*Rattus norvegicus*) with 86 specimens, then the Hooded Crow (*Corvus corone cornix*) with 45, the vole-rat *Arvicola terrestris* with 38 and so on." Would it not be possible to educate the hunters and game-keepers as to the real role played by this owl?—M. M. Nice.

55. A visit to Coto Donana in Spain. (Från ett besök på Coto Donana i Spanien.) Bengt Flach. 1957. *Fauna och Flora*, (3-4): 93-124. Coto Donana is a preserve of about 25,000 hectares along the Guadalquivir River in southwestern Spain, most of it privately owned by a wine firm. A week's visit there in early June resulted in an annotated list of 150 birds; large waders, including the White Stork (*Ciconia ciconia*), were most abundant. The Imperial Eagle (*Aquila heliaca*) nests on the preserve; before it was protected its usual clutch was 4 eggs, but now it generally lays only 1 or 2 eggs.—Louise de K. Lawrence.

56. Past distribution of the Great Bustard in Germany. (Ehemalige Reviere der Grosstrappe in Deutschland.) V. Palm. 1957. *Ornithologische Mitteilungen*, **9**: 203-207. The author reviews the past distribution of the Bustard (*Otis tarda*) in Germany and considers the question of whether or not it follows agriculture. He concludes that, being a steppe dweller, agriculture came to the Bustard rather than the reverse. This is a fine, complete review of a distributional problem.—R. O. Bender.

FOOD

(See also numbers 15, 25, 33, 42, 45, 54, 66)

57. The Food of the Herring Gull in the Prebreeding Season. (Zur Ernährung der Silbermöwe in der Vorbrutzeit.) Wilfried Ehlert. 1957. *Ornithologische Mitteilungen*, 9: 201-203. During 20 days between 27 March and 22 April 1957, the author examined 2,901 regurgitated pellets of the Herring Gull (*Larus argentatus*) collected on the island of Mellum. The results are found in the following table:

Total number of pellets	2,901
Number containing only one food species	2,689 = 92.7%
Number with only <i>Cardium edule</i>	1,875 = 64.6%
Number with only <i>Macoma balthica</i>	333 = 11.5%
Number with only <i>Scrobicularia plana</i>	40 = 1.4%
Number with only <i>Mya arenaria</i>	154 = 5.3%
Number with only <i>Mytilus edulis</i>	29 = 1.0%
Number with only <i>Littorina</i> sp.	8 = 0.3%
Number with only <i>Carcinus maenas</i>	240 = 8.3%
Number with only <i>Sturnus vulgaris</i>	1 = 0.1%
Number with only seed grains	9 = 0.3%

Measurements and dry weights of some of the pellets were obtained. The results show that a normal *Cardium* pellet contains from 11 to 14 animals while in a *Macoma* pellet there are approximately 100 to 140 animals.—R. O. Bender.

BOOKS AND MONOGRAPHS

58. Check-List of North American Birds. A Committee of The American Ornithologists Union. Fifth Edition. 1957. American Ornithologists Union, Baltimore, Maryland. xiii + 691 pp. Price \$8.00. The long-awaited Fifth Edition of the "A.O.U. Checklist" is at hand. Its coverage is the same as that of the previous volumes—North America north of Mexico, with the inclusion of Greenland, Bermuda, and Baja California. The total number of forms treated has grown from 1,420 to 1,686. Noteworthy is the decision to omit vernacular names for subspecies. Where fossil records of modern birds are available these have been included under the species as a separate item. The list of extinct species occurring only in the fossil record has been omitted from this edition.

The Check-List Committee and American ornithologists as a whole are to be congratulated on the production of this volume—evidence of the increasing maturity in the study of North American birds and a significant milestone in their systematics. It is only by such periodical publishing of the sum-total of our knowledge that the gaps in it appear. Once again we can look forward to the annual supplements.—J. C. Dickinson, Jr.

59. The Warblers of America. Ludlow Griscom, Alexander Sprunt, Jr., and other ornithologists of note, illustrated by John Henry Dick. 1957. The Devin-Adair Company, New York. 356 pp., 35 col. pl., numerous line sketches and maps. Price \$15. This imposing volume is patently aimed at the growing market of ornithophiles, who will find much in it of interest, use, and value, and who are certain to profit by a close study of its contents, particularly the introductory chapters by Griscom and the "supplementary" chapters by various other authors. Little else in the book is new or stimulating, and I fear most serious ornithologists will be as disappointed in certain aspects of it as I am. The book has been given so much advance praise and publicity and ballyhooed as the last work on warblers, the complete, up-to-the-minute successor to Chapman's monumental work on the group, that its more glaring faults deserve pointing out.

The long roster of distinguished contributors listed (in part) on the front jacket suggests the work is the combined effort of many of the best ornithologists writing in this country today. Though almost everybody who has written or worked recently on warblers has contributed to it, most of those credited have furnished only a short chapter or two, some less than a page, a few only a couple of paragraphs quoted from previously published works.

The book's weakest feature is what should be its backbone, the individual accounts in Chapter 8 of the "60 Warblers Breeding in the United States, Canada,

and Baja California," slightly more than half of which were prepared by Sprunt, the rest by a score of individual specialists on various species. The result, despite Griscom's editing, is a marked lack of uniformity both in style and in coverage. Most praiseworthy in these species accounts is their inclusion of interesting historical details of the development of our knowledge of the warblers and of the ornithologists responsible for it, an aspect too frequently overlooked in more serious, technical works, and indeed most welcome here. But they make no attempt to present life histories, habits, and behavior thoroughly, possibly because these topics are adequately detailed in Bent's "Life Histories of North American Wood Warblers," which is quoted frequently and to which the reader is often referred for further details. This despite the publisher's disparaging warning that the Bent volume is out of print, lacks color plates (*schrecklichkeit!*), and being a Government publication, hard to come by for the average birder!

Ranges are given rather sketchily (those who want more can, of course, go to Bent or the A.O.U. Check-List for it), and the outline range maps leave much to be desired. They are ineptly compiled and drawn and they reproduced poorly. I regret exceedingly the inclusion of the patently manufactured common names for every subspecies recognized. These were deliberately discontinued by the A.O.U. Check-List committee primarily because of their constant misuse and abuse. Yet here they survive, and calling them "local" instead of "common" names (why I can't see, for these names are certainly not local in any sense) in no way excuses them. What use are sight records of subspecies that can be separated only from long series in a museum tray, and then only with some 70 percent certainty?

From the editorial viewpoint, I wonder why Stevenson's brief account of "Gulf Migration" was shoved into the last appendix instead of being expanded into the chapter status the subject deserves? It looks as though it was included at the last minute as an afterthought—and it probably was. Isn't warbler migration as a whole, not only the Gulf aspects of it, important enough to warrant a chapter? Or did the compilers feel our knowledge of it still too scant or controversial, or were they unable to find a specialist to write it up? Surely some mention should have been included of the hazards of migration, some account of the numbers of migrating warblers found dead below high buildings, bridges, radio towers and other structures, and, more recently, of the terrific "bird falls" in the ceilometer beams at airports where literally truckloads of warblers and other night migrants are shoved off the runways after unpropitious visibility conditions during a flight. These facts should have been recognized and assayed. But the book contains nothing whatever on mortality or survival, or on longevity, a subject of extreme popular interest on which banding is supplying much information, even for warblers.

For that matter, I did not notice a single mention of or reference to banding anywhere in the book. Granted, warbler banding has so far been somewhat unproductive; until banders started using mist nets only a few years ago, few warblers were banded, and the recovery percentages on them are still probably the lowest among all birds. Warbler banding data do not begin to compare with those available for game birds or for gulls and terns, but the Patuxent files do contain warbler information of importance, particularly on distribution and demography. A comprehensive work such as this pretends to be cannot afford to overlook any reliable source of information, especially one as lucrative as the Patuxent banding files.

Books of this sort depend largely for their gross sales (and profits) on the appeal of their color plates, and this one's publicity makes much of "the 33 [35 in my copy] magnificent six-color off-set plates" that depict all the warblers of the United States and 31 more, 90 species in all! While I am duly impressed by the magnitude of such an ambitious undertaking, I have never felt quantity could substitute for quality. I agree with the jacket blurb that John O. Dick is a "gifted young artist-naturalist," but his painting is still a bit immature and contains obvious technical faults, which in this case are aggravated by exceedingly poor reproduction. The plates do not do his work justice at all, despite the publisher's contention that most of them are "entirely faithful to the originals." They have destroyed completely the sharpness of line that is one of Dick's best attributes, and their color-matching in many instances is little short of ridiculous

(see the two weird Waterthrushes on plate 23 for a horrible example). The plates were done in Holland, doubtless for economy reasons, and for all their awesome foreign hallmark, they are just a cheap, shoddy job, quite in keeping with the dust jacket that the publisher was apparently unwilling to reprint to conform to the changed title page and to mention the two color plates and half-dozen or so contributors added after the cover run came off the press.—O. L. Austin, Jr.

60. A Paddling of Ducks. Dillon Ripley. 1957. Harcourt, Brace and Company, New York. 256 pp., ill. by Francis Lee Jaques. Price \$6.00. This pleasant narrative of the author's experiences with and observations on waterfowl is built largely around the development over the years of his private duck pond in Connecticut which now supports one of the most notable collections of exotic waterfowl in this country. Written for popular consumption, the book nevertheless contains much good ornithology, particularly on distribution and behavior. The chapter on "Waterfowl Geography" for instance presents a succinct summary of waterfowl distribution with thought-provoking comments on the probable relationships and evolution of the family Anatidae. I found this most interesting reading, but I wonder how it will appeal to the layman who reads the book as "escape" literature? Oh well, he can skip that chapter, for he will find plenty in the rest that will hold his interest without taxing his powers of concentration and assimilation. Though the book's appeal will doubtless be greatest to the small coterie of aviculturists and the more literate sportsmen, it is so simple and entertainingly written and so enlivened with sprightly anecdotes of far places and famous people that it should, and I hope will, find a much wider audience.

Considering the book's general excellence, it is perhaps unfair of me to carp at inaccuracies in a very small part of it, but Ripley's caricature of Japanese duck-netting (pp. 104-105), which he admits never having seen, is distorted and unfair. My investigations of Japanese waterfowl hunting methods, from the Imperial parties he attempts to describe down to the peasant netting and liming in distant local village preserves, swung me completely from the side of the shooters to that of the netters. Shooting drives the birds away, but netting them successfully demands maintaining them quietly on the netting grounds. The harvest is regulated strictly by the netters themselves—they take from 10 to 20 percent of the duck population annually, a harvestable surplus which experience has shown the population can withstand. Every bird taken is utilized fully—even the feathers are marketed, and there is no crippling loss. Were it not for the netting preserves the numbers of waterfowl wintering in Japan, where few sanctuaries exist as such, would be far lower today than they are.

As for the Imperial netting parties, which I enjoyed often at both the Chiba and Saitama *kamobas*, I found the "curious method" quite sporting and exciting. The wild ducks seldom if ever crowd into the *kikibori* or dykes in a mass as Ripley implies. The ten netters, five on each side of the dyke, usually vie for a pass at two or three wild birds; 12 is the most I ever saw together in a dyke, and the records of the takes at the Imperial and Kuroda *kamobas*, kept faithfully for the past half century, bear this out. Ripley mentions game-keepers waiting patiently beside each quest "to whisk the captured ducks out of the nets and wring their necks." I never saw a Japanese wring a bird's neck—their methods of killing netted birds are far neater and more efficient, as I have described elsewhere—and the only ducks I ever saw killed within sight of guests at the Imperial parties were a few that escaped the nets (and many do) to be brought down by a Goshawk trained for the purpose. The Imperial game-keepers truss the netted birds by hooking their wings together over their backs and put them alive in special baskets for later sorting and disposal at the keeping pens. Lastly, while sake always flowed freely at the luncheons, these always followed, never preceded the hunt, for tipsy guests would be most unwelcome on the netting grounds, and I never saw one there.

I might add that our mutual friend Dr. Nagamichi Kuroda has never to my knowledge been "head of the Imperial duck-netting preserve and ceremonies." His official position in the Imperial household was considerably higher—head of protocol. Also for the record, his two unique Crested Shelducks survived the great B-29 fire raids of May 1945 (not 1944) that destroyed the Kuroda house and museum in a small cement fireproof "godown" on the Kuroda property, not in the safekeeping of a colleague.

Knowing the author's views on conservation, I was surprised at the mildness of his comments on oil-killing on the Cape Cod beaches. On second thought, however, his underplaying his feelings and descriptions of these and other water-fowl tragedies will perhaps be far more effective in the long run than had he condemned them more forcefully.—O. L. Austin, Jr.

61. Ornithology of the "Brategg" Expedition. Holger Holgersen. 1957. *Kommandr Chr. Christensens Hvalfangstmuseum I Sandeffjord, Publication No. 21; Scientific Results of the "Brategg" Expedition 1947-48, No. 4*, 80 pp., 8 photographs, 15 maps. This report of the author's bird work in the Antarctic 10 years ago shows, reading between the lines, how frustrating trying to study birds can be in that part of the world. No expedition has ever gone there primarily for bird work, and ornithology invariably gets a very low priority, far below those of geographic exploration, meteorology, oceanography and other "more important" objectives. The ornithologist is usually allowed to tag along in some other capacity, the demands of which allow him little or no time for birding when the opportunity does present itself. Most often he is the ship's or the expedition's doctor—as were Wilson, Levick, Gain, Cendron, Prevost, Sapin-Jaloustre, and Sladen, to mention but a few. My chance to accompany "Deep Freeze I" was as an Air Force Observer. Holgersen went as meteorologist on what was primarily an oceanographic expedition.

In the old days of slow sailing ships it was often possible to collect birds from shipboard. From any modern ocean-going vessel capable of withstanding the Antarctic ice (except for the little catcher-boats that accompany the big whaling factory ships), collecting is next to impossible. Only those who have tried know the difficulty of getting the skipper to stop the ship momentarily, or to lower a small boat for the ornithologist to retrieve a bird or two, even when hove to in calm weather for other purposes as when making oceanographic soundings. I have my own sad memories of trying in vain to shoot badly needed specimens so they'd fall inboard as the ship steamed relentlessly through countless flocks of prions.

Seldom can the ornithological contingent manage to keep any sort of consistent series of observations of the birds while the ship is under way. After all, he does have to eat and to sleep once in a while when his other duties will let him. When the expedition does get near birds, as at island breeding grounds, transportation to where the birds actually are is always difficult at best, often unobtainable, and the time the ornithologist can spend with his main objective always too short and limited for extended observations. Strangest of all is the inevitable time-lag between doing the work, getting it written up, and eventually published, which seems longer for work in the Antarctic than in any other part of the world. Holgersen's 10 years is not unusual, despite his apologies—it took Lowe and Kinnear almost twice that long to publish their report on the "Terra Nova" collections.

Such long-delayed reports usually lose freshness and detail with the passage of time, but Holgersen's certainly does not. He was not only unusually diligent in the field, he obviously kept copious and detailed notes. Most valuable are his maps showing the distribution and abundance of the various pelagic species he observed along the "Brategg's" track, for they help fill one of the biggest gaps in ornithological knowledge, the movements of these birds at sea. I note with interest that he banded 2 adult and 2 young Chinstrap Penguins and 26 adults and 25 young Adelies on Peter I Island. Unfortunately he gives no details on the size or kind of band he used or on what part of the leg he placed the bands. Apparently none of these banded birds has been reported since. Penguins don't seem to move far from their breeding grounds, and very few humans ever get to Peter I Island or even near it.—O. L. Austin, Jr.

62. Of Men and Marshes. Paul L. Errington. 1957. Macmillan. New York, vii +150pp. 22 drawings by H. A. Hochbaum. \$4.50. This is a testimonial to the wilderness in marshes, particularly the glacial marshes in the north-central United States and adjacent Canada; these the author has known, lived in, and studied from boyhood. He makes us see the marshes as they really are with the unquenchable urge for life of their manifold creatures despite difficulties and disasters. He chronicles the course of the seasons in the marshes throughout the year and over many years. He tells something of other marshes to the south, the west, and the north; of how to be safe and comfortable while exploring

marshes, and of the lessons to be learned there that can be applied to human problems. Vividly he describes the good life of muskrats in a population of medium size, and the confusion, fighting, and suffering that follows overpopulation.

"To me, overcrowding is so much the supreme factor underlying stress in the muskrat populations that its lessons may scarcely be overemphasized. . . . The common propensity of man and muskrat for growing savage under stress appears to be basic." The "biological foundation of peace is that of moderation" and there'll be no peace nor any chance to save the values that make life worth living unless mankind curbs its "irresponsible increase in numbers."

The whole book is an eloquent plea for the preservation of our wetlands. It is a document on the natural history of marshes and marsh animals. Paul Errington's text and Al Hochbaum's drawings of ducks and marshes make an altogether fascinating and admirable book.—M. M. Nice.

63. Behavior of the Chaffinch, *Fringilla coelebs*. P. Marler. 1956. *Behaviour*, Suppl. V: 1-184. Leiden. E. J. Brill. A very fine scholarly paper, based on 4 years' observation of 5 to 10 pairs of Chaffinches in the wild, some of them marked with colored rings, and also on birds in captivity. It is a study of the life cycle with the emphasis "on the evolution of the various movements that fall under the heading of 'displays.' Displays seem usually to be associated with conflicting tendencies and indeed it seems to be this very conflict that is their fundamental cause," p. 6.

Chapter I describes maintenance activities, Chapter II responses to predators and other danger stimuli. The next three give an illuminating discussion of the winter flock and winter fighting. Nine chapters are devoted to reproductive behavior. The 15th chapter winds up the year with autumn behavior and the 16th gives "conclusions on the derivation and motivation of Chaffinch displays." There are excellent summaries in English and in German, a 5-page bibliography, an index, and 10 plates each with 6 photographs of displays of captive birds.

A few samples from the summary will give an inkling of the wealth of valuable material in the book. "Flocks may move in 'drifting,' 'synchronized' and 'escape' movements, in which different methods of co-ordination are used. While in flight large flocks use visual clues, small flocks auditory clues as well." "Before establishing territory, first-year males examine it for nest-sites and song posts." Yet, later, "Sites are selected by the female." In nest building, "Young, inexperienced females are slow because of using insufficient bulky material. . . . An average estimate is 1,300 building visits for one nest."

This monograph is a notable example of the ethological approach in life history studies. In simple, straightforward English the author tells not only what the Chaffinch does throughout the year, but how it does it, how it expresses its moods and intentions, and thus how it communicates with its fellows. Dr. Marler's book is a necessity for anyone seriously studying the behavior of birds.—M. M. Nice.

64. Man's Role in Changing the Face of the Earth. Edited by William E. Thomas, Jr., Carl O. Sauer, Marston Bates and Lewis Mumford. 1956. University of Chicago Press, Chicago. xxxvii + 1193 pp. Illus. \$12.50.—An impressive and very important international symposium of 70 anthropologists, biologists, ecologists, historians, geographers, sanitary engineers, etc., etc. The first 400 pages treat of the past, the next 500 of the present, and the last 200 of the future. It is a fine thing to get all these specialists from different fields to pool their experience and knowledge and try to find answers to the appalling problems we face. A vast amount of valuable information is presented here and it is impossible to mention more than a few samples bearing directly on ecology: Fraser Darling's "Man's ecological dominance through domesticated animals on wild lands,"; 778-787; Paul Sears' "The process of environmental change by man": 471-484; E. H. Graham's "The re-creative power of plant communities": 677-691.

The consensus of opinion is well expressed by William A. Albrecht (p. 649): "man's . . . behavior . . . resembles that of an oversuccessful parasite." While exploiting his soils, man is destroying his host and accomplishing his own death." Although people are awakening to some extent to the terrific problems that face us, yet the two major difficulties are unrecognized by the majority: the threat to all life involved in nuclear radiation, and the hopelessness of saving

more than a fraction of the beauty, wildness and wildlife of the earth unless the explosion of population can be curbed. As Sir Charles Darwin says (p. 969), "the menace of world over-population . . . must be regarded as the central problem of mankind—as I think for all time, but certainly for the coming century."—M. M. Nice.

65. The Quest of the Divine. Alexander F. Skutch. 1956. Meador, Boston. 440 pp. \$3.50.—This philosophical work of a distinguished naturalist gives us a very different ideal from the popular worship of an ever higher scale of living. Dr. Skutch points out that "civilization and culture, including art, letters, science, philosophy, ethics, and religion" depend on "a flourishing state of the natural world," (p. 245). It is our duty wholeheartedly to support conservation, and individually to avoid wasting natural resources. "Everything we eat, all our narcotics and alcoholic stimulants, practically everything we wear, a large share of the materials of which our dwellings are constructed, are torn from the living world. Not only do countless organisms surrender their lives to fill our needs and support our extravagances, the land on which these products are grown is in most instances made unavailable to the animal and vegetable life that originally occupied it. . . . One who clearly understands the interrelations of all living things will lead a frugal life, avoiding all extravagances and waste; for nothing so well expresses our feeling of brotherhood with all that lives and breathes."—M. M. Nice.

66. Pasture and Range Plants. Sections 1 and 2: Native Grasses, Legumes and Forbs; Section 3: Undesirable Grasses and Forbs; Section 4: Poisonous Grassland Plants. Anonymous. 1955-57. Phillips Petroleum Company, 466 Adams Bldg., Bartlesville, Oklahoma. These excellent brochures, beautifully illustrated in color, are designed to provide "a practical, educational guide to further the knowledge of grasses, legumes and forbs on which our country, our people and our organizations depend for life today and for growth in the future." "All of us depend far more than we realize on range vegetation as the *basic* source of our own and of our nation's strength, vigor and vitality."

Fifty-three desirable native grasses and forbs are illustrated and described, as well as 38 undesirable plants and 31 poisonous plants. The high nutritive value is emphasized of many of the flowering plants of the prairies. The most important indicators of healthy and over-grazed ranges are listed. If a range has not been too badly abused, a system of resting the land will give the valuable native plants a chance to recover and the undesirable ones will be crowded out. A long list of references is given in each booklet. The Phillips Petroleum Company is doing a distinct service to conservation in the preparation of these attractive and authoritative publications which may be had for the asking.—M. M. Nice.

LETTER TO THE EDITOR

19 December, 1957

Sir:

I am indebted to Mrs. M. M. Nice for drawing my attention to the review in *Bird-Banding* (28: 44, January, 1957) of my paper on the "Mortality and Egg Production of the Meadow Pipit with Special Reference to Altitude."

I am afraid the reviewer, Dr. O. L. Austin, Jr., has made an error in his calculations, a mistake which I almost made when preparing the paper for publication, and which, on realizing the error, caused me to omit any attempt to balance mortality against the productivity of the species. The error is this; the Meadow Pipit is double brooded *only* if both broods are reared successfully and the pairs which are unsuccessful replace the destroyed eggs or nestlings and also attempt a true second brood. Thus, while the breeding success was 43 per 100 nests, the success per 100 pairs is somewhat higher and this is the main reason why the calculation made by Dr. Austin does not balance.

If the first brood of the Meadow Pipit is considered, then 57% of the nests are destroyed but these are replaced within 10 days as has been shown by E. P. Chance in connection with his study of the parasitism of the Cuckoo (*Cuculus canorus*) and published in his book "The truth about the Cuckoo." These replacements presumably receive a similar 57% mortality and those which succeed still