RECENT LITERATURE

BANDING

(See also Numbers 8, 34, 39, 61, 64, 65)

1. Report on Bird-Ringing for 1952. A. L. Thomson and E. P. Leach. 1953. *British Birds,* **46**(8): 287-303, (9): 313-330. A total of 96,326 birds was ringed in Great Britain, the largest record yet. "Of these 56,867 were trapped and 39,459 were ringed as chicks." A Manx Shearwater, *Puffinus p. puffinus,* was recovered from the Argentine. Two Teal, *Anas crecca,* "were ringed simultaneously at Peterborough in February and recovered together near Leningrad in April of the same year." Another ringed at Peterborough Nov. 9, 1952 was recovered in Newfoundland December 5, 1952. Many recoveries of Wigeon, *Anas penelope,* come from territories of the U.S.S.R. As to Barn Swallows, *Hirundo rustica,* "ringed as young, 6 were recovered near their respective places of marking in their second year and 2 in their third." The recovery in Germany in February 1953 of a Blackbird, *Turdus merula,* ringed in Britain in May 1951 "as a nestling is the first occurence of the kind." Of Redstarts, *Phoenicurus phoenicurus,* ringed in Gloucestershire, "3 ringed as young and 2 ringed as adult females were recovered in the following year, and one of each also in the year after that, at the place of marking."—M. M. Nice.

2. Results of the ringing investigation of migration, instituted by the Royal Museum of Natural History, Leiden, 37 (1951), 2nd part. (Resultat van het ringonderzoek betreffende de vogeltrek, ingesteld door het Rijksmuseum van Natuurlijke Historie te Leiden, XXXVIII (1951), 2e deel.) G. C. A. Junge and J. Taapken. 1953. *Limosa* **26** (1-2): 49-70. In 1951 the Hollanders banded 28,564 birds of 142 species, more than a third of them (10,404) Starlings *(Sturnus vulgaris).* Also tabulated are the data for about 500 returns and recoveries received during the same period, spread over 45 species, the Starling again leading the list with some 200 records. Practically all the results are from post-war bandings; one Starling banded in 1946 and several banded in 1947 were reported in 1951, but the bulk were banded within a year of reporting. From the few birds banded in Holland during the war years the following are of interest: a Chaffinch *(Fringilla coelebs)* banded 5 Nov. 43 found dead in Hanko, Finland, 5 April 51; a Screech Owl *(Asio otus)* banded 10 May 43 reported from Heilo in January 1951; a Turtle Dove *(Streptopelia turtur)* banded in July 44 and shot near Bilbao, Spain, 6 Sept. 1951; and a Black Tern *(Chlidonias niger)* found dead in June 1951 in the colony where it was banded as a chick in 1944. The only reports from pre-war bandings are of Herring Gulls *(Larus argentatus);* one banded as a juvenile in August 1933 was found dead in January 1953; several others managed to survive until 1951 from 1934, 1935, 1936, and 1937.—O. L. Austin, Jr.

3. Ringing Operations. Summary for the Year Ended 31 March, 1953. P. C. Bull. 1953. *Notornis* **5**(5): 138-141. A listing by species and number of birds banded and recovered (2495 and 124 respectively) during 1952-53, and (12,079 and 663 resp.) prior to March 31, 1953. Most-banded species in 1952-53 were Black-backed Gull, *Larus dominicanus* (682), Black-billed Gull, *L. bulleri* (597), Australian Gannet, *Sula bassana* (410), and Red-billed Gull, *L. novaehollandiae* (314). Details of all 1952-53 recoveries are presented.—Hustace H. Poor.

4. Observations on a Marked Population of Blackbirds at Lower Hutt. P. C. Bull. 1953. *Notornis* **5**(5): 149-156. Methods and preliminary results of banding 189 Blackbirds *(Turdus merula)* in New Zealand are presented. Both aluminum and colored bands were used, and plumage and weight records were made of all specimens. The birds apparently are quite sedentary, restricting themselves to a non-defended "home range" which includes a small defended territory near the nest. Sight and trap records become infrequent during the post-breeding and molt season.—Hustace H. Poor.

5. Colored Leg Bands for Waterfowl. Ronald W. Balham and Wm. H. Elder. 1953. *Journal of Wildlife Management,* **17**(4): 446-449. The first completely satisfactory color leg band for Canada Geese *(Branta canadensis)* is described in this article. Bright-colored red, green, white, and yellow Plexiglas was

cut to the proper size (2.75 by 0.75 by 0.125 inch) and the ends were beveled at an 85 degree angle. When heated to a temperature of about 300°F in a small oven, the Plexiglas was easily molded around the leg of a goose in the field. Forming tongs, made by cutting in half a short piece of steel tubing of 1.125-inch inside diameter and brazing onto the tips of a pliers, were used to obtain a good fit. A 5-inch strip of electrician's rubber tape was wrapped spirally around the leg to safeguard against burns. The plastic was cooled and set by submerging the leg into a pail of water for a few seconds. The rapid cooling of thinner material (0.06 inch thick) made it difficult to form the band before the plastic lost its elasticity when the technique was applied to ducks. Companies from which materials may be purchased are cited.—Helmut K. Buechner.

6. Techniques for Mass Capture of Flightless Blue and Lesser Snow Geese. Graham Cooch. 1953. *Journal of Wildlife Management*, **17**(4): 460-465. To determine migration routes, winter range, and hunting pressure, large numbers (presumably somewhat less than 25,000, although the article is not clear on this point) of Blue Geese *(Anser caerulescens caerulescens)* and Snow Geese *(Anser caerulescens hyperboreus)* were banded on the breeding grounds at the mouth of the Boas River, Southampton Island, N.W.T., Canada, in 1952. Using ancient Eskimo techniques, flightless geese were herded into tight flocks and driven into a pen 50 yards in circumference. On two occasions 15,000 birds were under control, of which 5,000 were in the main pen. The technique is well described and carefully illustrated. The greatest loss during a single trapping operation was 78 young and 19 adults in a flock of 5,000. More frequent drives with more men are recommended to reduce mortality. Applied over a period of years, this interesting and effective technique should provide some fundamental banding data that would add much to the knowledge of population dynamics of Blue Geese and Snow Geese.—Helmut K. Buechner.

MIGRATION

(See also Number 46.)

7. Homing Experiments with Black-headed Gull *(Larus r. ridibundus* L.) and Common Gull *(Larus c. canus* L.) in the winter-quarters. (Orienteringsforsøg med Haettemåge *(Larus r. ridibundus* L.) og stormmåge *(Larus c. canus* L.) i vinterkvarteret.) Eric Peteresen. 1953. *Dansk Ornithologisk Forenings Tidsskrift*, **47**(3): 153-178 (from the English summary). Gulls of both species wintering in the lakes and parks of Copenhagen were trapped, banded with numbered metal bands and colored celluloid rings in different combinations, and also painted conspicuous colors for quick recognition. Some were carried back and released on their breeding grounds near Stockholm, Sweden, about 530 kilometers northward; others were released in Amsterdam about 600 kilometers southward, still others some 30 kilometers eastward at Malmö, and a few at various directions and distances within Denmark. The two species showed markedly different abilities in returning to their regular wintering grounds.

The adult Black-headed Gulls "possess a pronounced homing instinct for getting back to their winter quarters." The tendency to return is greater in birds carried back north to the nesting grounds than in those released farther southward; 22 percent returned from Stockholm the same winter, only 9 percent from Amsterdam. Young birds in their first winter do not exhibit the ability as strongly as adults; of 53 young birds released elsewhere only 2 returned the same winter; nevertheless they recognize their winter quarters, for these young returned in subsequent winters in the same percentage as the adults.

The Common Gulls did not return nearly as well (4 percent as against 20-44 percent in the Black-headed Gull) "probably because they are not so closely associated with a definite winter quarter, but being more marine birds roam over greater distances."

Three photographs show the techniques of trapping the gulls with throw nets and marking them; the details of the returns are listed in four tables and plotted on two maps. This is an interesting series of experiments, well worth duplicating elsewhere with other species where facilities permit.—O. L. Austin, Jr.

8. The Migration of the Tree Pipit, *Anthus trivialis* (L.) in Europe and Africa. (De Trek van der Boompieper, *Anthus trivialis* (L.) in Europa en Afrika.) J. Spaepen. 1953. *Le Gerfaut* **43**(2-3): 178-230 (from the French summary). During the 15 years the author has watched and studied the movements of the Tree Pipit in Belgium, he has caught and banded some 3,000, most of them summer migrants, and principally young of the year. He reports them "of a trusting nature," easily lured by the calls of caged live birds to be captured in nets set along hedge-rows. The fall movement starts in Belgium in July; the migration increases through August and reaches its peak during the first 10 days of September; most of them are gone by September 20, though stragglers are taken as late as October 10.

The number of banded birds recovered is rather low. The author lists 122, some from his own banding, but most from the available literature (he appends an extensive bibliography of 75 titles). From these he traces the species' movements southward to its central African wintering ground. The autumn movement is generally southwestward; pipits banded in Great Britain and the Low Countries are recovered along the coast of southwestern France and the Atlantic coast of the Iberian Peninsula; birds from Scandinavia and western Russia move to northern Italy, continue southwestward to the Cote d'Azure and the Riviera, and probably cross the Mediterranean via Corsica and Sardinia. The Tree Pipits seem in no hurry to reach their winter quarters; they may delay along the way in favorable spots as long as 29 to 46 days. Their maximum southward travel averages 40 to 88 kilometers daily.

The species migrates during daylight only, moves more actively in the morning than toward evening, when it beds down for the night in potato and sugar-beet fields. The migrants fly relatively high, and travel singly or in small, scattered flocks, rarely of more than 10 or 12 birds, uttering their "rallying" cry continually. In good weather these calls can be heard from the sky when it is difficult to see the birds.

The return flight in spring is poorly documented, for the species is very difficult to trap at that season, and no recoveries are available. Returns show that young birds come back to their birthplace, and adults are faithful to their nesting site of the previous year. It is believed therefore that the birds follow the same route on their return journey.—O. L. Austin, Jr.

9. The Migration Lanes of the White Stork according to Ringing Results. (Die Zugscheide des Weissen Storches nach den Beringungs-Ergebnissen.) Ernst Schüz. 1953. *Bonner Zoologische Beiträge*, **1-2**(4): 31-72. A detailed report on recoveries of *Ciconia ciconia* according to the region of origin. Maps show the places of recovery of birds nesting in southwestern Germany, in central and northern Germany, and in the Netherlands. The author concludes on the basis of his investigations that the two different directions of migration—southeast and southwest—of the White Stork population are inborn. Many Storks fall victims to high tension wires and some to factory chimneys, while many others are shot in France and Italy.—M. M. Nice.

10. Autumnal Migrants on The Campeche Bank. Raymond A. Paynter, Jr. 1953. *The Auk*, **70**(3): 338-349. This paper presents further evidence in support of the thesis that migration of birds across the Gulf of Mexico is regular and normal. Data were accumulated during the period August 27 to September 3, 1952. Observations at sea, and on four groups of islands lying 80-100 miles off shore, resulted in the identification of 36 species of migratory birds. By extrapolation the observations at sea are used to indicate that as many as 137,000 individuals per day may arrive on the Yucatan Peninsula by this over water route. It is suggested that the migrations had begun during daylight of the day preceding arrival at their destination.—J. C. Dickinson, Jr.

LONGEVITY AND MORTALITY

(See Numbers 2, 37, 55.)

NIDIFICATION AND REPRODUCTION

(See also Numbers 29, 33, 36, 38, 45, 53, 55, 58, 66.)

11. The Question of Ten-day Incubation Periods. Margaret Morse Nice. 1953. *The Wilson Bulletin*, **65**(2): 81-93. Mrs. Nice has carefully investigated the reported ten-day (and shorter) incubation periods for the eggs of birds. Prior to the 19th century no published statement of an incubation period shorter than 11 days was found. John J. Audubon, in 1831, was apparently the first ornithologist to report a ten-day incubation period for any species. This report for the Ruby-throated Hummingbird *(Archilochus colubris)*, in which species the incubation period is about 16 days, was cited by widely known ornithologists well into the 20th century. Many other species reputed to have ten-day incubation periods have been found to incubate 11 or more days. White-eyes of the family Zosteropidae reported by many (usually based upon second-hand information) as having a nine- or ten-day incubation period actually incubate 11 or 12 days. Similarly, the widely accepted ten-day incubation period for eggs of the Cowbird *(Molothrus ater)*, apparently initiated by Bendire in 1895, is certainly in error. Since 1918, 62 observations all disclosed an incubation period of 11 or more (11 to 14) days. The Cowbird's incubation period probably does not show any adaptation to parasitism, for eggs of some non-parasitic icterids have equally short incubation periods. Instances of authenticated ten-day incubation periods for the eggs of some non-passerine species (notably woodpeckers and cuckoos) may possibly be attributed to the retention of an egg an additional 24 hours in the oviduct before laying. Readers are reminded that the incubation period (p. 89) ". . . can best be determined by counting the time from the laying of the last egg to its hatching."—L. R. Mewaldt.

12. The Egg-laying and Incubation Periods of Rockhopper, Macaroni and Gentoo Penguins. A. M. Gwynn. 1953. *Australian National Antarctic Research Expeditions Reports* (issued by the Antarctic Division, Dept. of External Affairs, Melbourne), Series B, **1**: 1-29. This important paper reports the first accurate and intensive study to be made of the egg-laying habits of penguins of the genus *Eudyptes*, whose five species so far as known lay two-egg clutches of markedly different size. In both the Rockhopper *(Eudyptes chrysocome)* and Macaroni *(E. chrysolophus)* Penguins, the only members of the genus to be studied adequately, the author has determined that the smaller egg invariably is laid first.

In the Rockhopper Penguin the interval between eggs is normally 5 days and the incubation period is 33-34 days. "The most remarkable fact emerging from this study is that the first egg of the rockhopper is normally wasted. Its fate is extremely varied, but only when the second egg is lost does it produce a viable chick, and as the larger egg always receives preferential treatment, this rarely happens under natural conditions."

In the Macaroni Penguin the interval between eggs is usually 3 days and the incubation period is about 35 days. "While waiting for the second egg the bird crouches over the first rather than broods it . . . often it is lost even before the second is laid, though whether it is deliberately ejected or not is difficult to tell. . . . It is probably rare for both eggs to survive more than a few days after the completion of the clutch."

Comparison of weights and measurements of the unequal-sized clutches shows in both species that "the weight of the first and second egg are not independent. for a large first egg is generally associated with a large second egg. This suggests that the egg weights are samples from a bivariate population."

Inasmuch as their effective clutch has been reduced to one, this curious retention of the habit of laying a "token" first egg by the Rockhopper and Marconi Penguins is most thought provoking. Gwynn comments only that "Its function is certainly not an insurance against the loss of the larger egg, though it might ensue that the larger egg is [thus more] properly prepared for and receives prompt and wholehearted attention on its arrival."

The Gentoo Penguin *(Pygoscelis papua)* lays two eggs of approximately equal size, though very variable both in size and shape. Those of the same clutch are usually similar in shape, and the first egg slightly larger than the second. As in

the other two species, comparison of clutches shows "that the weight of the first egg is not independent of the weight of the second." The laying interval is about 3 days and the incubation period is usually 35-36 days. Both eggs are hatched. "Incubation does not usually start when the first egg is laid, but at some time before the clutch is complete, so that the first egg hatches about 24 hours before the second."

As with other species whose eggs are frequently robbed for human consumption, the statement is encountered frequently (and widely accepted) that penguins will lay again and again after losing their eggs. By removing eggs systematically at various stages the author tried to prove experimentally "what happens when the first clutch is lost." While his results are not as conclusive as he wishes they might be, he found that while the Rockhopper can occasionally be induced to lay a third egg, it is apparently so rare that he questions as unlikely and unproved the reports that the species lays again regularly in other areas. He found no cases whatever of the Macaroni Penguin laying a third egg, even when both eggs were removed as soon as laid. He experimented at greater length with the Gentoo. ". . . while a natural clutch of three eggs is rare, a gentoo will in certain circumstances lay a third egg in an attempt to complete its clutch after the loss of the first egg. But once the clutch has been completed, even if it is taken immediately, the stimulus to continue laying is lost . . ." Only rarely, and under ideal conditions of "mutual stimulation," as when an entire colony moves to another site after mass robbing, may second clutches "be laid after an appropriate interval."

Further intensive study of the reproductive habits of these interesting species is most certainly warranted by this fine paper.—O. L. Austin, Jr.

13. The Adelie Penguin. W. J. L. Sladen. 1953. *Nature*, **171** (May 30): 952-961. Rookeries of 50,000 nests of *Pucheramphus adeliae* in Graham Land and 10,000 nests in the South Orkneys were studied during two breeding seasons. "Approximately 1,300 Adelies were temporarily marked with paint, 338 banded with aluminum rings, many of which were also painted, and more than 800 dissected. . . . The large number of dissections was possible only because our 20-60 sledge dogs, when at base, had to be fed on seal or penguin meat." Ten pairs had been previously ringed at marked nests; two years later "twelve returned to the nest-sites where they had been originally ringed, and five of the original pairs were still intact." Two more birds were found at adjacent nests. The pair stays at the nest site until the two eggs are laid, whereupon the female goes to sea and the male incubates alone until the return of his mate about two weeks later. "Average fasting periods of seven marked males and females showed that the males fasted at least forty days, the females twenty-one. A continuous fasting period of forty days by a bird is exceeded only by the male emperor penguin *(Aptenodytes forsteri)*, which fasts for sixty days during incubation" (see Stonehouse B. 1952. *Nature*, **169**: 760).

Males usually stayed away about two weeks, after which the female left for a few days; on her return the eggs were usually hatched or hatching. Incubation lasted 36 days on an average. When the chicks were large enough to be left alone they congregated into the so-called "crèches." "By marking birds during both years of study, it was found that parents recognized and fed their own individual chicks." When adults lost their eggs, they deserted, but usually returned and went through some of the pre-egg behavior, but no second clutch was laid. "These unsuccessful breeders have been mistaken by previous writers for 'parent guards' of the crèche, a function they do not perform." The author believes that the "pair-bond is maintained, not merely because they return to the same nest-site, but because they recognize each other as individuals, even after a winter among the pack-ice. . . . Field experiments also showed that parents adopted chicks from other nests if small, but very rarely ones that were large enough to stand up. . . . Further, in at least three cases, a pair shifted their nest-site and yet remained together." A fine example of careful, well-planned research based on marking and dissection of many individuals.—M. M. Nice.

14. Contribution to the Biology of the Bee-Eater *(Merops apiaster)* in Slovakia. B. Matousek. 1951. *Sylvia*, **13** (4): 122-125. A nesting colony was watched and it was found that the young stayed in the nest 31 to 33 days.

"The forage is composed of about 60% dragon-flies, of 36% larger day butterflies, of about 2% wasps and bumble-bees and 2% bee drones." There was not "a single case ascertained of the catching of a bee worker."—M. M. Nice.

15. The Attraction of Purple Martins to an Urban Location in Western Oregon. Stanley M. Richmond. 1953. *The Condor*, **55**(5): 225-249. Purple Martins *(Progne subis)*, have long been established in nesting colonies in bird-houses erected by man in North America east of the Rocky Mountains. West of the Rocky Mountains, however, such nesting colonies are comparatively rare. This is a most interesting account of attempts (thus far not successful) over a period of five years (1948-53) to establish an urban breeding colony at Eugene, Oregon. These attempts included the erection of apparently suitable bird-houses in urban areas and also at a site immediately adjacent to a colony nesting in a natural habitat; hand-raising of local and eastern (Arkansas) birds; and the attraction of local adults by the presence of active hand-reared birds.

Procedures employed to hand-raise not only locally acquired nestlings, but also young from artificially incubated eggs, are discussed in detail. The diet included many species of insects, fresh liver, pulverized hard-boiled eggs, chicken eggshell, antibiotics, vitamins, and calcium and iron salts. Observations on the behavior of these birds provide useful information for the student of avian ethology. In 1952 the ten surviving hand-raised birds became independent and apparently departed on fall migration between the 17th and 28th of August. At the time of migration, the youngest birds were 45 days old and the oldest 80 days of age. The oldest was the first bird to leave permanently. This older bird was self-reliant during the last seven weeks of its stay and helped feed younger birds during this period.—L. R. Mewaldt.

16. Nesting of Peregrine Falcons on Buildings. (Nidification du Faucon Pèlerin sur les édifices.) Georges Olivier. 1953. *L'Oiseau du Revue Française D'Ornithologie*, **23**(2): 109-124. The adoption of nesting sites on suitable projections of large buildings by Peregrine Falcons *(Falco peregrinus)* usually arouses considerable comment when observed. The author presents information obtained by correspondence with ornithologists in most European countries, parts of North Africa, and in the United States and Canada. Findings reveal that such nesting on buildings is widespread, but is nowhere common. Unfortunately, few specific records of nests are presented and few references are made to the ornithological literature.—L. R. Mewaldt.

17. The Breeding Biology of the Velvet Scoter. I. General Nesting Ecology. (Zur Fortpflanzungsbiologie der Samtente *Melanitta f. fusca* (L.). I. Allgemeine Nistökologie.) Jukka Koskimies and Eero Routamo. 1953. *Papers on Game Research* **10.** Helsinki. pp. 1-105. A five year study in the Aspskär Bird Sanctuary in the outermost archipelago of the eastern Gulf of Finland, concentrating on four islets with a land area of about 18 hectares. The nesting population of Velvet Scoters increased from 9 pairs in 1948 to 23 in 1952. "Territorial fights at the roosting places are common. The female ascends to the shore earlier in the evening and leaves it later in the morning than the male" (p. 100). Mates keep close together. "The female is the dominant and initiating partner." One female was found nesting on the same islet all five years; six others were found at least two years on the same islet, but never in exactly the same nesting depression. Charts are given showing the relationship between temperature and start of egg-laying. "The cold spring of 1951 delayed the onset of egg-laying. Each female seems to have its individual time of egg-laying." Eggs were laid on an average every 40 hours. The first down is seen in the nest at about the time the fourth egg is laid. Sets averaged 8.45 eggs. Red-breasted Margansers, *Mergus serrator*, often drop eggs in the Scoter nests; these have never hatched, their incubation period averaging 32 days (p. 66), while that of the Scoters averaged 27.5. In 42 nests 55 percent of the eggs hatched. Young stayed in the nest about 24 hours after hatching (p. 89). During egg-laying males stayed with their mates, but soon afterwards congregated into flocks and left the nesting grounds. A fine, detailed study.—M. M. Nice.

18. Observations from Fahrinsel. (Fahrinselbeobachtungen). Hans Heinrich Reinsch. 1953. *Ornithologische Mitteilungen* **5**(2): 21-29. This three-part report covers the time the author spent as a warden on the island during 1951. The first part describes incidents of unusual behavior observed. Among these were the finding of single eggs of the Red-breasted Merganser in the nests of a Teal and a Mallard. In both cases the young of the host hatched and left the nest, leaving the merganser egg behind. This would be expected because of the longer incubation time of the merganser. One Mallard clutch was found in an old Magpie's nest, unusual in view of the many suitable, normal nesting sites available. A female Mallard continued incubating a clutch from which several eggs had been destroyed by the Common Gull. Usually such nests are deserted. The author removed two of the three eggs from a gull's nest; both male and female continued incubating, one on the single egg in the old nest, the other on the two eggs in the new. Two mixed clutches of the Black-headed Gull and the Common Tern were found. One was destroyed by the Common Gull, all four eggs (three tern, one gull) of the other clutch hatched but the three terns left the young gull behind in the nest where it was found dead.

The second part reviews the nesting and the migrant birds observed. It gives the number of clutches found for each species, the number lost to gulls for most species, and the number of young successfully fledged. As an example, approximately 80 pairs of Red-breasted Mergansers laid 102 clutches of eggs; 40 were destroyed by the Common Gull and 8 were abandoned. Four hundred young hatched from the remaining 54 clutches. The number of fledged young was not determined.

Egg destruction by the Common Gull is discussed in the third section, particularly the question of whether gulls preferentially seek eggs of certain species. The author believes that heavier predation on the merganser than on the Mallard is due to the fact that mergansers are still incubating eggs when the gulls are feeding their young, while the Mallards and gulls hatch at about the same time. There is some discussion of the manner in which the gulls carry off eggs and of other details of the predation. A very interesting paper.—R. O. Bender.

19. Observations on the Breeding Biology of the Kestrel. (Beobachtungen zur Brutbiologie des Turmfalken *Falco tinnunculus* L.) R. Piechsecki. 1952. *Ornithologische Mitteilungen* **4**(2): 25-33. A rather detailed account of the nesting of a pair of Kestrels in the dome of a building in the city of Halle in the years 1949 and 1951. During the first year all five eggs hatched and five young were raised. Two of the eggs hatched in one day, two on the next and the last one a day later, with a probable incubation period of only 21 days. The male brought food to the female during the incubation period, mostly field mice, also a few lizards, sparrows, and beetles.

In 1951 there were again five eggs. As the male was a banded bird the author speculates that he was one of the 1949 brood which were banded. This was a season of food scarcity because of a low mouse population; the male did not bring food to the female until the very end of the incubation period. By examining the pellets found in the nest, the author was able to prove that the female ate all but two of her eggs. Artificial feeding by the author halted this cannibalism so that both eggs hatched on following days. Three days later the female deserted the young. They were removed by the author; one died but the other was raised to adulthood and released.—R. O. Bender.

20. On the breeding of the Black Redstart. (Zur Brutbiologie der Hausrotschwanzes [Phoenicurus ochruros gibralt.].) Theodore Goller. 1952. *Ornithologische Mitteilungen*, **4**(3): 65. An unbanded female mated with a banded male hatched five eggs during the summer of 1943 employing a nest at a site used in previous years. They were assisted by a banded female in the feeding of the young until they left the nest. This female, when captured, proved to be the one that had nested in the same place during the previous year. Since the male was not caught it is not known whether he was the male of the previous year.—R. O. Bender.

21. Rhythms in the Breeding Behaviour of the European Wren. H. L. K. Whitehouse and E. A. Armstrong. 1953. *Behaviour,* **5**(4): 261-288. Analysis and discussion of mechanical recordings at two nests in a summerhouse of *Troglodytes t. troglodytes.* Air temperatures were taken about nine times a day during daylight. Time on the nest decreased with rising temperature. In 1952 the female spent 52 percent of the time on the nest at a maximum temperature of 87° F. and 66 percent at a maximum temperature of 64°. The decrease was brought about by longer average recesses. Number of recesses per day ranged from 17 and 18 with one female in 1947 to 35 to 48 with a bird in 1949 and a maximum of 53 with a third bird in 1951. The subject of daily rhythms is discussed in this and in other species, and illustrated with eight figures.—M. M. Nice.

22. The Palatability of the Eggs of Birds: Illustrated by Experiments on the Food Preferences of the Ferret *(Putorius furo)* and the Cat *(Felis catus);* with Notes on Other Egg-Eating Carnivora. Hugh B. Cott. 1953. *Proc. Zool. Soc. London,* **123,** Part 1: 123-141. An interesting summary of records of egg predation by Carnivora in nature. Experiments with a tame ferret and cat showed a general agreement with the food preferences of hedgehog, rat, and man. Eggs that are distinctively marked, and that are laid in low bushes or in holes are apt to be unpalatable.—M. M. Nice.

23. Note on the Number of Clutches of the Wood Pigeon and the Stock Dove. (Over de Broedsels van de Bos- en Holduiven *(Columba palumbus* L. en *C. oenas* L.)) W. Paulussen. 1953. *Le Gerfaut* **43**(2-3): 128-131 (from the French summary). The nesting season of both these species extends from late March to early December in Belgium, and each usually raises three broods. A graph by months of a hundred clutches of each species shows three distinct peaks for the Wood Pigeon in April, June, and August, and only two for the Stock Dove in May and August. The first laying of the latter is almost invariably destroyed by Jackdaws *(Corvus monedula),* but nevertheless the species is still able to raise its three broods, which follow each other so closely that the eggs of later broods are sometimes laid before the young of the preceding brood have left the nest.—O. L. Austin, Jr.

24. The distribution in the Netherlands, the adaptation of the eggs and a list of partly disputed facts on the breeding-biology of *Cuculus canorus.* *(Cuculus canorus:* De verspreiding in Nederland, de aanpassing van haar eieren en een opsomming van deels omstreden punten betreffende de broedbiologie.) W. Ph. J. and A. W. Hellebrekers. 1953. *Limosa,* **26**(1-2): 1-20 (from the English summary). The authors list the known records of species parasitized by the Common Cuckoo in the Netherlands and discuss the inheritance of egg color in the Cuckoo, which is of importance in determining the acceptance or rejection of the Cuckoo eggs by several of its commoner hosts. They summarize and comment briefly on 40 items of the Cuckoo's breeding biology and behavior which have been subject to dispute in recent years. Bibliography of 23 titles.—O. L. Austin, Jr.

LIFE HISTORY

(See also Numbers 12, 13, 17, 25, 58)

25. Life Histories of North American Wood Warblers. A. C. Bent. 1953. United States National Museum Bulletin 203. Washington, D. C. 734 pp. $4.50. This is the nineteenth of Mr. Bent's notable volumes. It starts with a four page section on "General Remarks on the Family Parulidae." Most of the accounts are written by the author; in some cases not the happiest choice seems to have been made in regard to ornithologists contributing sections on particular species. For instance, with the Ovenbird, two nesting studies (Mousley, 1926, *Auk,* 43: 263-288), (Nice, 1931, *Auk,* 48: 218-228) were completely missed and little use was made of Hann's (1937, *Wilson Bulletin,* 49: 145-237) careful research, with the result, to mention only one item, that nowhere are we told of the strikingly slow pace at which birds of this species feed their young. Warblers have been

popular subjects for the ten-day incubation notion and five of them in the present volume suffer in this respect, while with the Yellow Warbler, incubation "has been recorded as from 8 to 11 days," (p. 168). In reality incubation usually lasts 12 days in this family, rarely 11. (The 11 days "determined" for Yellow-breasted Chat rests on a guess, for G. A. Petrides (1938, *Wilson Bulletin*, 50: 186) found two nests in one of which eggs were laid June 13, 14, 15; on the 25th the nests still contained eggs, "but on the morning of the 27th, there were, in each nest, three small young which had undoubtedly hatched late the day before. Thus the incubation period was eleven days." There is no proof that the last young did not hatch early on the morning of the 27th.) Three species are stated to incubate 14 days—Kirtland's and Prairie Warblers and Louisiana Water Thrush, but no dates are given. J. Van Tyne's account of Kirtland's Warbler is outstanding. There are 63 plates of fine photographs of the birds and their nests.—M. M. Nice.

BEHAVIOR

(See also Numbers 13, 15, 17, 18, 25, 62, 68)

26. Introduction to the study of Bird Behavior. (Einfuhrung in die Ornithologische Verhaltensforchung.) Georg Steinbacher. 1952. *Ornithologische Mitteilungen.* In four parts: **4**(6): 132-137; (7): 145-151; (10): 222-230; (11): 250-256.

This series of four papers constitutes another of Steinbacher's excellent reviews of ornithological problems. The subject is treated under the following headings: 1. Preface; 2. The bird and its environment; 3. The components of animal behavior; 4. The elements of animal behavior; 5. Learning, memory and intelligence; 6. Moods and emotions; 7. Communication; 8. Territories; 9. The bird and its food; 10. Adults and young; 11. Flocking; 12. Reproductive behavior; 13. The bird and its enemies; 14. Subjective behavior; 15. Hereditary behavior as means of determining specific and generic relationships.

The paper concludes with a selected bibliography.—R. O. Bender.

27. Field Observations on the Biology of the Marsh Tit. Averil Morley. 1953. *British Birds*, **16**(7): 233-238, (8): 273-287, (9): 332-346. Very interesting study of *Parus palustris*. In mixed flocks of tits dominance depends on size. Among the Marsh Tits territory owners are dominant over landless birds. "A Marsh Tit had three positions in society: firstly, according to its species in the tit flock; secondly, according to whether it owned land or was landless; and thirdly, . . . dominance according to sex" (p. 235). Territory owners traveled with the flock while it was on their land; they tolerated landless birds, but not neighboring territory owners. The flock is of great importance to the Marsh Tit, to whom it serves as a refuge, "But it is not as easy to state what are the advantages of the flock," (p. 237). Song functions largely as threat to other males, but sometimes as a signal to the mate. A mated male on February 15 sang 246 songs in half an hour, (p. 274). Like the Song Sparrow's *(Melospiza melodia) tchunk*, the Marsh Tit's *pitchou* is used by territory owners to make their claims known. "The note is used by both sexes when other animals besides Marsh Tits intrude on the territory, such as dogs, foxes and human beings. It is perhaps difficult for us to realize that some birds may not feel fear when we invade their territories, but indignation, and therefore react with a threat or aggressive call," (p. 278). A large variety of calls and notes is described.

Again like the Song Sparrow, males deliberately invaded neighbors' grounds. "It was as if they almost sought the emotional storm which such an invasion provoked," (p. 282). The pair stays together throughout the year and defends the territory continuously. In March, "Any excitement, such as strife with neighbors, the male feeding the female, the presentation of bait by me or even my appearance would incite Marsh Tits to visit holes," (p. 336). As to the nestlings, during their first week although the eyes were closed "they were evidently sensitive to light, for a hand placed noiselessly at the hole so as to block the light as does the body of the parent provoked the gaping reaction," (p. 344).

Male and female roosted separately, the female going to roost before her mate. "in this agreeing with the Blue Tit and the Starling," (p. 344), as well as with a variety of other species.—M. M. Nice.

28. Display and Mating Behaviour of the Black Grouse, *Lyrurus tetrix* (L.). E. O. Hôhn. 1953. *The British Journal of Animal Behaviour*, **1**(2): 48-58. Between 1941 and 1947 Black Grouse were watched on the Hay Head "lek" (an Anglicism for a place where Black Grouse display) a total of 47 days, 25 in spring and 22 in autumn. Hôhn believes that rookoing, which is often performed in the absense of any obvious external releaser, is not only an aggressive form of behaviour toward males but also advertises the lek to females. (We have reached the same conclusion regarding the booming of Prairie Chickens *(Tympanuchus cupido pinnatus.)*) Crowing, a harsh blowing or hissing call, is apt to be preceded by a flutter jump and is often spontaneous, although it followed most constantly when a hen flew low over the lek. The releaser for crowing appears to be the sound of a hen taking flight, but any similar sudden noise may release crowing. Threat displays are mostly formal. Hôhn gives as evidence that fights may occasionally be to the death the fact that there are records of dead birds found on leks; however no evidence of the *cause* of these deaths is presented.

Territories were well defined. On a two-cock lek, each cock held to his own territory even when the other cock was absent. "When hens are present the existence of individual territories is most clearly defined, for while each cock immediately displays to the hen or hens that come near him, he does not follow them outside his area. . . ." (The opposite is true of Prairie Chickens.) Display in autumn was less vigorous than in spring, with less rookoing, and consisted mostly of crowing and threat display. Although no hens were seen to walk the lek among the cocks, autumn display attracted them. The author suggests that further studies on reaction to stuffed birds in spring and autumn are desirable. He tried stuffed decoys on three mornings and suspects that in autumn cocks are aggressive toward stuffed cocks, but show no sexual response to stuffed hens. A stimulating paper.—Frances Hamerstrom.

29. A Study of Incubation Responses and Some Other Behaviour Patterns in Birds. Holger Poulsen. 1953. *Vidensk. Medd. fra Dansk naturh. Foren.*, **115**: 1-131. An important paper from the Zoological Garden in Copenhagen. Much space is devoted to the egg-rolling movement which is "found in birds which nest under similar external conditions, e.g. swans, geese, ducks and grebes," (p. 29), as well as gulls, terns, shorebirds, rails, Griffon Vulture, *Vultur gryphus*, Eagle Owl, *Bubo bubo*, gallinaceous birds, domestic pigeon and Rock Dove, *Columba livia*. No passerine bird was found to possess this movement, nor did the Wood Pigeon, *Columba palumbus*, and other tree-nesting doves. The Meadow Pipit, *Anthus pratensis*, and Skylark, *Alauda arvensis*, did not retrieve eggs; they build deep nests on the ground. Egg-retrieving was "found in all birds which meet with the situation where their eggs roll out of the nest, i.e. all birds with shallow nests on the ground," (p. 29). Yet pelicans form an exception. The movement was the same in all the birds.

Drinking and scratching movements were also studied. "The sucking drinking movement already known in pigeons *(Columbidae)* was found in five genera of weaver finches *(Estrildinae)*. Scratching the ground was found in the greater part of gallinaceous birds *(Galli)*; a special 'scratching' movement was found in whydah-birds *(Viduinae)*," (p. 121). The former scratch with one foot at a time. as does the Honey Buzzard, *Pernis apivorus*, while the latter use both at once and this is characteristic of many of the Emberizinae.

In experiments on the stimuli releasing the retrieving of eggs and incubating eggs the author found that color was important, while surface was very important. As to shape, models had to be rounded in order to be acceptable. Weight was of no importance. As to size, the larger the better; a Bean Goose, *Anser fabalis*. tried her best to retrieve an Ostrich egg and even a larger model (p. 67). Number was of no significance, but distance was very important in the retrieving of eggs.

The "waggling movements" of an incubating bird serve to bring the eggs into contact with the brood patches; the eggs are turned when the bird rises and rolls them under itself with the same movement as that used in retrieving eggs (p. 94).

Among many other subjects the matter of determinate and indeterminate layers is discussed; experiments showed that the domestic pigeon belonged to the former class (pp. 81-86).

"The innate releasing mechanisms of the different brooding reactions are very wide"; many instances are known where supernormal stimuli are more effective than "the natural, 'normal' situation," (p. 113).

This is a very interesting detailed report, recounting many original experiments with full discussion of pertinent data from other workers, and giving an excellent coverage of the field.—M. M. Nice.

30. Some Comments on Conflict and Thwarting in Animals. M. Bastock, D. Morris and M. Moynihan. 1953. *Behaviour*, **6**(1): 66-84. An examination of terms and concepts when drives are thwarted. Since displacement activities use motor patterns other than the instincts activated, the term "redirection activity" is proposed for those situations in which the pattern of one of the instincts stimulated and thwarted is used on a different object from that releasing it. Thus, when during pair-formation a female alights on a male Black-headed Gull's territory, the male is very apt to attack other birds. A Song Sparrow yanked strings and attacked straws in his cage when his rival alighted outside. Instead of "overflow" or "vacuum" activities the authors suggest the term "reaction to suboptimal stimuli." They consider that many so-called "neuroses" in animals could be described in ordinary ethological terms. They emphasize the necessity of "increased accuracy in descriptions of ethological patterns involving displacement activities and associated phenomena."—M. M. Nice.

31. Appetitive Behaviour, Consumatory Act, and the Hierarchical Organization of Behaviour—with Special Reference to the Great Tit *(Parus major)*. R. A. Hinde. 1953. *Behaviour*, **5**(3): 189-224. A detailed analysis of causal mechanisms underlying the activities of a bird. The author decides there is "no generalized 'territorial' appetitive behaviour" in this species. He discusses reproductive, feeding and fighting behaviour. "The different instincts of an animal may utilise the same motor patterns. The behavioural organisation of the whole animal must thus be pictured as a set of closely interwoven hierarchical systems," (p. 221).—M. M. Nice.

32. Social Hierarchy in a Hand-reared Group of Herring Gulls. (Sociale Hierarchie im Aufzuchtschwarm der Silbermöwen.) Friedrich Goethe. 1953. *Zeitschrift für Tierpsychologie*, **10**(1): 44-50. The first pecking in the young *Larus argentatus* was seen at 9 days. From the 23rd day a straight line dominance hierarchy developed and still held at the age of 18 months. This was independent of place. Cage mates of other species were also dominated; age, bodily size and strength seemed to play no appreciable role. Despotism has been noted in groups of wild Herring Gulls. "Sex dominance and social despotism have different functions and different physiological bases."—M. M. Nice.

33. Bowers and Display of Bowerbirds. (Laube und Balz der Laubvögel.) 1953. Erwin Stresemann. *Die Vogelwarte*, **16**(4): 148-154. The author describes either the bowers or display areas built and used by nine different genera of Bowerbirds *(Ptilonorhynchidae)*. He considers the bowers to be of definite biological significance; in monogamous species they are for pairing; in species which do not pair they serve to stimulate females and attract them to a sexually active male. (Professor Stresemann has called a misprint to my attention: *zeugungsuntüchtig* should read *zeugungstüchtig*.) Bowers are maintained only during the season when the testes are active. "Modern animal psychology is no longer averse to seeking the forerunners of human aesthetics in birds and thus taking stock once more in the viewpoints of Darwin and Romanes. One may nonetheless consider certain attributes of the decorative material selected by the male Bowerbirds as releasers, which meet a demand of a receptive female in respect to color and form. . . ." The author raises the question: "How can one explain the presence of these behavior patterns in the heritage of the entire group if not by sexual selection of inherited variations?" No bibliography is given.—Frances Hamerstrom.

WILDLIFE MANAGEMENT

(See also Numbers 5, 6, 42)

34. Status of the Coot in the Mississippi Flyway. William H. Kiel, Jr., and Arthur S. Hawkins. 1953. *Trans. 18th North American Wildlife Conference*, March 9, 10, and 11, 1953: 311-322. Though the species is still despised by many hunters as hardly worth shooting and definitely not worth retrieving, the wildlife management profession at long last is beginning to take some notice of the "lowly" Coot *(Fulica atra)*. This is apparently because, now that ducks are continually becoming scarcer despite lower bag limits and shorter seasons, the coot is coming "to the attention of an ever increasing number of hunters who are looking for action on a dull duck day or for more targets when a limit of four or five ducks has been bagged."

The authors try hard to assess the status of the Coot over that indeterminate part of central North America which game administrators call the "Mississippi Flyway," but they are severely hampered by a lack of reliable information. Their bibliography lists only 16 titles published on the subject in the past 15 years, most of them general reports and inventories of waterfowl in which, the authors point out, the estimates on Coots are inaccurate and unreliable "due to census difficulties and widespread indifference toward the species."

They complain that "Banding results were not available to show migration patterns of coot populations"—nor, I might add, to provide any of the statistical information so indispensable to wildlife management which only banding can supply, such as natural and hunting mortalities, longevity, life expectancy, and population trends. The absence of banding data is not surprising because so very few have been banded, even though (the authors fail to mention) many thousands have been trapped coincident to the trapping of ducks for banding. It has long been the practice of the workers hired to band ducks on the large "scientific" projects conducted by various federal and state agencies and Ducks Unlimited, to regard the Coot as a nuisance not worth wasting bands on, and to release unbanded the many they catch. Perhaps we should be thankful they release the Coots instead of wringing their necks, for "sportsmen" accuse the species bitterly (and falsely) of competing for the available duck food and of interfering with duck nesting.

The one thing the authors are able to show beyond question is that the Coots are declining, and rapidly. Among other evidence they note that "Coots on a study area in southwestern Manitoba declined 62 percent since 1949. . . . in 1952 there was a decline of over 40 percent from the 1951 breeding population. Whether this decline represented a reduction in the coot population as a whole or a shift in the local population to avoid semi-drouth conditions in Manitoba is not known." When they add "On the same area over the four-year period, 1949-1952, 97 percent of 380 coot nests hatched successfully," why blame the weather for the dearth of birds?

Elsewhere in the paper we find ample evidence that the species is being criminally overshot. How long do the game managers think a species can withstand such slaughter as Bellrose (1944) reports (p. 315), when on one 1,800-acre lake in Illinois hunters on the opening day shot 23,800 Coots in 1942 and 18,225 in 1943, an estimated 90-95 percent of the Coots present? It is miraculous that enough have managed to survive so that "For three hunting seasons, 1949-1951, only the mallard ranked above the coot in number of waterfowl bagged in the Mississippi Flyway. More than three times as many coots were shot in the Mississippi Flyway as in the other flyways combined during these seasons." Yet nowhere is it suggested that perhaps too many Coots are being shot, or recommended that steps be taken to reduce the annual kill by hunters — potential political suicide for a game manager.

To save the Coot for posterity I would recommend a lower bag limit and a shorter, later season, particularly in the Mississippi region. And to obtain adequate information on the species before it is too late I would strongly urge game managers to overcome their prejudices and to band as many Coots as possible. They are easy to trap, but not easy to handle. They are spunky birds, they bite, they can scratch you painfully with their sharp toes, and they never stop trying to do both while they are in your hands.—O. L. Austin, Jr.

35. The Importance of Beaver in Waterfowl Management at the Seney National Wildlife Refuge. Elizabeth B. Beard. 1953. *Journal of Wildlife Management*, **17**(4): 398-436. Marshes and small ponds resulting from past or present beaver *(Castor canadensis)* activity were preferred by waterfowl on the Seney National Wildlife Refuge in the upper peninsula of Michigan. Greater interspersion of water and marsh vegetation created through beaver activity resulted in large populations of waterfowl, particularly Black Duck *(Anas rubripes)*, Mallard *(Anas platyrhynchos)*, Blue-winged Teal *(Anas discors)*, Ring-necked Duck *(Aythya collaris)*, Green-winged Teal *(Nettion crecca carolinense)*, Wood Duck *(Aix sponsa)*, Baldpate *(Anas americana)*. The ecosystems developing under the influence of beaver provide a favorable ratio between water and cover, a favorable composition and juxtaposition of communities, favorable water depth (6 to 18 inches), an abundance of plant and animal food, and suitable nesting cover. In the four study areas, the average annual duckling production was 1.7, 2.1, 3.6, and 4.6 per acre, reflecting the favorability of the waterfowl habitat. The article is somewhat lengthy, but it provides objective evidence as a basis for cause-and-effect relationships between favorable waterfowl production and beaver activity.—Helmut K. Buechner.

36. The Call-Count as a Census Method For Breeding Mourning Doves in Georgia. Terry A. McGowan. 1953. *Journal of Wildlife Management*, **17**(4): 437-445. Number of doves *(Zenaidura macroura)* calling and total number of calls were recorded during 3-minute stops at each of 20 stations along a 20-mile circuitous route. Morning calling activity showed an abrupt increase in late April, 1951, and maintained a plateau between May 15 and June 15. The plateau was reached two weeks later in 1952, possibly as a result of lower temperatures. The average number of birds heard per 20-station count during the morning at peak season was 30.6 in 1951 and 28.0 in 1952. Most of the counts were made by one observer, a period of 2 hours being required to complete the 20 stations. When five observers started simultaneously at 4-station intervals, the total time for counting at the 20 stations was reduced to 24 minutes, and it became clear that calling activity was much less during the second hour. To eliminate time bias, the total number of doves heard at each station by all five crews was recorded, each station thereby being recorded in both earlier and later counts. This is important only if comparisons between stations are to be made. One or two good stations alternated rather consistently with one or more poor stations, indicating a moderate colony nesting behavior, but no large breeding colonies. Comparing morning call counts at the peak of the calling season with area censuses of each of five 100-acre plots plus a buffer strip showed that approximately one dove was heard calling for each two breeding pairs. The plateau of highest breeding activity, as indicated by call counts, occurred at about the same time as reported for similar studies in Maryland and Wisconsin, but was shorter in duration. It is thought that while the spread of the breeding season is greater to the southward, the season of intense breeding is similar or even shorter in the south.—Helmut K. Buechner.

37. Migration and Mortality of Ducks Hand-Reared and Wild-Trapped at Delta, Manitoba. George K. Brakhage. 1953. *Journal of Wildlife Management*, **17**(4): 465-477. In this well-written paper, analyses of banding data gathered over a 21-year period showed: (1) No major differences in migration patterns between hand-reared and wild-trapped Mallard *(Anas platyrhynchos)*, Pintail *(Anas acuta)*, Redhead *(Aythya americana)*, and Canvasback *(Aythya valisineria)*; (2) essentially similar times of departure and rates of autumnal migration for both hand-reared and wild-trapped birds; (3) birds hand-reared from wild eggs returned to their natal marsh at a rate similar to wild-trapped birds (about 1/5 for Mallards and 1/3 for Pintails); (4) mortality rates for hand-reared Mallards were 30 percent, Pintails 33 percent, and Redheads 18 percent higher than for wild-trapped birds of the same species; and (5) fall juvenile mortality of hand-reared birds exceeded that of wild-trapped birds by the following magnitudes: Mallards—40 percent, Pintails—63 percent, and Redheads—152 percent. Considering the greater vulnerability to shooting and the high first-year mortality rate of hand-reared birds, the depletion of populations in marshes where

wild eggs are gathered, and the expenditures necessary to promote an artificial-rearing program, the practice cannot be recommended as a practical management technique. Development, restoration, or improvement of habitat is suggested as the only economically justifiable and biologically sound method for increasing and maintaining waterfowl populations.—Helmut K. Buechner.

38. Some Hatching Curves From Different Areas of Michigan's Pheasant Range. Ralph I. Blouch and L. L. Eberhardt. 1953. *Journal of Wildlife Management*, **17**(4): 477-482. Approximately 8,000 wings and legs of Ring-necked Pheasant *(Phasianus colchicus)* were collected from hunters during the hunting seasons of 1950 and 1951. Adults were distinguished from juveniles by measuring spur length (subject to an error of at least 5 percent), and juveniles were then aged by length of selected primary feathers. From juvenile ages, dates of hatching were plotted for the entire Lower Peninsula and by regions. The technique of ageing is not mentioned in the article. In personal correspondence, Mr. Eberhardt informed me that juveniles were aged on the basis of length of selected primary feathers, rather than on the rate of moulting. Using length of primary feathers, juveniles can be aged to 22 weeks; on the basis of moult juveniles cannot be aged beyond 14 weeks. Since most of the juveniles were over 14 weeks during the hunting season, much of the ageing must be based on length of selected primary feathers. The best pheasant-producing area of the state showed the latest hatching peak (June 19) and widest hatching distribution, whereas the poorest area exhibited the earliest peak of hatch (June 4) and narrowest distribution. No definite conclusions were reached concerning the causes for secondary peaks of hatch. The absence of cold rainy weather within a week or two following hatching suggested that late peaks in some areas may have been caused by some nest-destroying factor (probably plowing) associated with farming practices in the middle third of May.—Helmut K. Buechner.

39. Pheasant Banding in New Zealand, 1948-51. Kaj Westerskov. 1953. *Notornis*, **5**(5): 157-163. Over a four-year period 3,485 pen-reared pheasants *(Phasianus colchicus*, a mixture of three races) were banded and liberated; 40 percent were 3 months old, the remainder ranging up to 20 months. More than half of the 117 recoveries (3.4 percent) were within a mile of the release point. Most of the recoveries were from hunters, and the kill was concentrated in the first two weekends of the hunting season. Evidence points to a low survival ratio of pen-reared birds, and consequent high cost and low value of such stocking. —Hustace H. Poor.

40. Mammal control and secondary poisoning of hawks and owls. (Saugetierbekämpfung und Sekundärvergiftungen bei Raubvogeln und Eulen.) Fritz Steiniger. 1952. *Ornithologische Mitteilungen* **4**(2): 36-39. In a brief discussion of secondary poisoning the author states that only arsenic and thallium sulfate can be suspected; of these arsenic is no longer commonly used. Qualitative analysis for thallium sulfate proved its presence in the liver, spleen, and kidneys of 3 out of 41 dead barn owls. Differentiating between thallium sulfate poisoning and starvation is difficult because extreme emaciation occurs in both. —R. O. Bender.

CONSERVATION

(See also Number 12)

41. Present Needs for Research on the Use and Care of Natural Resources. Committee on Use and Care of Natural Resources. 1953. Pub. 288. National Academy of Sciences—National Research Council. 2101 Constitution Ave., Washington 25, D. C. 35 pp. 50 cents. An important report stressing the fundamental need of basic research for conservation of forests, grasslands, water, mineral and fisheries resources, soils, and wildlife populations. Stanley A. Cain and Robert C. Cook stress the fundamental importance of a policy in regard to

human population. They say "if all the nations of the world should achieve the same standard of living as our own, the resulting world need for materials would increase to six times the present already massive consumption" (p. 25). They point out that the overseas projects of the United States are currently doing everything they can do to increase world overpopulation, and they urge that "equivalent attention be paid to measures designed to affect the birth rate." They also urge that these projects take into consideration the "ecological principles of conservation" rather than concentrating on immediate needs. Finally they recommend that the benefits of our programs should be scientifically evaluated as "It is no light matter to introduce well-intentioned programs for human improvement that may result only in dividing the misery among more people."—M. M. Nice.

42. The Great Wintering Ground of the Southeast Caspian Sea. (Les Grands Quartiers d'Hiver du sud-est de la Mer Caspienne.) X. Misonne. 1953. *Le Gerfaut* **43**(2-3): 103-127 (with Flemish summary). The marshes and plains of the Iranian coast of the Caspian Sea are perhaps the greatest wintering ground still extant for northern waterfowl. Migrants from Europe and Siberia are funnelled into it by the Caucasus and the ranges and semideserts of Turkestan, and discouraged from going farther by the Elburg Range, which must be crossed by the waders and other species which push on to winter in the Persian Gulf and on the Arabian and African coasts. The author gives short notes on some 110 species he observed during a few autumn months he spent in this waterfowl paradise, and charts the arrivals and departures of the more important migrants and winter visitants there from mid-October to early December.

In discussing present-day waterfowling in the region he describes how hunters are now able with jeeps easily to run down bustards and to get within range of the large flocks of geese on the open plains, formerly unapproachable. (The jeep is also largely responsible for the sudden decline of gazelles in the Middle East.) Though game laws are non-existent in Iran, and the hunting is not regulated or controlled in any way, he does not consider the bountiful supply of wildlife in any danger because native hunters are few, and handicapped by their primitive muzzle-loaders and poor ammunition.

The immense rafts of waterfowl of some 20 species that winter on the shoal waters of Bandar-i-Gaz Bay are harried daily by hunters in 40 or 50 small boats. He estimates their annual winter's kill at between 50,000 and 100,000 birds, which he considers "an insignificant quantity, of the order of 2 or 3 percent" of the wintering waterfowl population. Even were the hunters able to buy modern weapons, he believes the kill would be kept within safe limits by the lack of a market, because the Muslim inhabitants are prevented from eating game by the Koran's proscription as "unclean" of any meat that is not killed ritually (by bleeding).

Having recently watched and studied the sudden extirpation of several equally marvelous waterfowl concentrations in Korea and Japan, where the birds were once similarly protected by religious taboos and lack of modern weapons, I cannot help but feel that the extended survival of this Caspian concentration is far more tenuous than M. Mesonne postulates. In the first place the Iranian Muslims are not orthodox Sunnis, but far less pious Shi'ites who do not take their Koran very seriously. In the second, such political, social, and economic upheavals as are currently in progress in the Middle East, with the development of oilfields and various pressures by the Great Powers, are as disastrous to wildlife as outright war. The presence of the jeep is prophetic of rapid changes to come. Long before adequate measures to preserve them can be taken, the clouds of waterfowl in the Bandar-i-Gaz and the geese and bustards on the adjoining plains will be nothing but a memory.—O. L. Austin, Jr.

43. "Oil-plague"—Observations from Spiekeroog Island. ("Olpest"—Beobachtungen auf der Nordseeinsel Spiekeroof.) Erlend Martini. 1953. *Ornithologische Mitteilungen* **5**(3): 44-48. A table of 108 birds of 15 species found oiled on this North Sea island during 6 months of 1951 and 3 of 1952. The Common Scoter *(Melanitta nigra)* was the principal victim, numbering 67 of the 108 casualties.—R. O. Bender.

44. Duck catastrophe at Hohwacht. (Die Entenkastrophe von Hohwacht.) Peter Kuhlemann. 1953. *Ornithologische Mitteilungen* **5**(6): 111-112. This is an account of the loss of about 10,000 ducks, mergansers, and divers resulting from "oiling" during the second week in January. Variable winds brought the oiled birds ashore all through the early spring. The author pleads for international recognition of and action on oil discharge near coastlines.—R. O. Bender.

PARASITES AND DISEASES

(See also Numbers 40, 43, 44)

45. Loss of Song Bird Broods through Slugs. (Verlust von Singvogelbruten durch Schnecken.) Gerd Dieselhorst. 1953. *Anzeiger der Ornithologischen Gesellschaft in Bayern*, **4**(2): 72-73. In some thousands of visits to nests of bush and ground nesting passerines, especially of the Yellow Bunting, *Emberiza citrinella*, and Whitethroat, *Sylvia communis*, the author repeatedly found in or under the nests dead young birds with extensive skin injuries caused by slugs, *Arion empiricorum*. He discovered that the slugs attacked and killed healthy nestlings. Two such cases were reported in the *Ornithologische Centralblatt* in 1878.— M. M. Nice.

PHYSIOLOGY AND PSYCHOLOGY

(See also Numbers 29, 30, 31, 32, 51)

46. Day length, Migration, and Breeding cycles in Birds. Albert Wolfson. 1952. *Scientific Monthly*, **74** (4): 191-200, illus. The author reviews the major findings dealing with photoperiodism and summarizes experimental evidence from his laboratory confirming previous conclusions. He emphasizes the role of summation of hours of light as distinguished from day length. Such physiological responses as fat accumulation or testis enlargement can be elicited with an artificial fixed day length. Thresholds dependent upon previous history and refractory periods are discussed. The reviewer suggests more attention to these phenomena in the annual cycle of tropical birds as against an emphasis on the rather small variations of day length in the tropics. Further, variations in accessibility of preferred foods for the young may be more marked than has often been supposed. —C. H. Blake.

47. Gonadal and Fat Response to a 5:1 Ratio of Light to Darkness in the White-throated Sparrow. Albert Wolfson. 1953. *The Condor*, **55**(4): 187-192. Three male and six female White-throated Sparrows *(Zonotrichia albicollis)* were exposed to four 5-hour perods of light, each followed by a 1-hour period of darkness, during each 24 hours for 71 days beginning on 25 January 1952. The birds, captured as October migrants in northern Illinois, had been kept on natural photoperiods prior to 25 January. During the experiment they were housed in three small cages in a light-proof aviary kept at about 74° F. Periodic observations on body weights indicated an initial decrease and then a pronounced increase which started about 16 days after the start of the experiment. Mean increase in body weight for seven of the White-throated Sparrows was 22.8 percent from the start of the experiment. Maximum weights were recorded at 30 to 35 days, after which they tended to decrease. Weight responses of the ovaries and oviducts were similar to those obtained in earlier experiments from birds exposed to 20-hour daily photoperiods. Dr. Wolfson, however, cautiously suggests (p. 191) that the females ". . . show a tendency toward a greater reproductive response and the fat response of the group as a whole tends to be greater." The possible roles of light and darkness in the reproductive response are briefly discussed.—L. R. Mewaldt.

48. The Spectrographic Analysis of Sound Signals of the Domestic Fowl. Nicholas Collias and Martin Joos. 1953. *Behaviour*, **5**(3): 175-188. Illustrations and discussion of sound spectrograms of fowl. "Distress notes of

chicks are composed of descending frequencies only, whereas ascending frequencies are the prominent component of pleasure notes." Sounds that attract chicks, such as the hen's clucking, her food and roosting calls, show repetitiveness, brief duration of the component parts, and presence of relatively low frequencies. This is true also of the rhythmic pencil tapping that was found to quiet distress calls of chicks. Warning signals, as alarm for aerial predator, alarm for ground predator, alerting call of mother hen, squawks of a hen held in the hand, threat notes and crowing of cocks, show relatively long duration, little repetitiveness, and absence of very low frequencies. These signals are much louder than "the sounds used to attract chicks and also contain an element of harshness." Very interesting work.—M. M. Nice.

49. Acoustic Orientation in the Oil Bird, Steatornis. D. R. Griffin. 1953. *Proceedings National Academy of Sciences,* **39**(8): 884-893. The Guacharo, *Steatornis caripensis,* discovered by von Humboldt in 1880, roosts and nests in total darkness in caves in Venezuela. In the roosting caves it gives deafening shrieks, but utters sharp clicks when flying in and out. It "guides its flight through dark caves by a type of acoustic orientation similar to that used by bats, but the oil bird employs for this purpose short pulses of sound that lie well within the frequency range of human hearing."—M. M. Nice.

MORPHOLOGY AND ANATOMY

(See also Number 38)

50. The Post-embryonic Development of the Tufted Duck. Z. Veselovský. 1951. *Sylvia,* **13**(1): 1-19. Observations on 15 hand-reared *Nyroca fuligula.* Sketches show the position of the pteryles, growth of feather tracts, and changes in the shape of the bill. The author claims that the oil gland does not function until growth of the contour feathers which starts at 20 days. At four to five weeks the females give the adult note *karr,* which is common to all females of this genus, but the males retain the infantile peep until full-fledged. Detailed descriptions are given of growth of feathers and extremities and increase in weight. There is a 3½-page summary in English.—M. M. Nice.

51. Measurements and Weights of the Swallow. (Masse und Gewichte der Rauschwalbe.) Gerhard Creutz. 1953. *Die Vogelwarte,* **16**(4): 164-167. Repeated measurements of living swallows. *Hirundo r. rustica,* recaptured in different years show in general an increase with age in wing length and in the length of the outer tail feather. Males have longer wings and tails than females. The wing measurements show a great deal of overlap, but the measurements of the tail feathers overlap so little that they are often a useful sex character (males range 103 to 131 mm, average 116.1; females range 86 to 110 mm, average 97.2). Regrowth of an outer tail feather after plucking takes about three months; growth slows down toward the end of this period.

Weights of 37 swallows are given. Female weights show a wide range of variation. These are influenced by increasing ovary size, or even presence of well developed eggs, and extra fat deposits during the breeding and rearing season. "Our bird books, therefore, should get away from giving merely average weights which have little significance, and strive for annual weight curves."—Frances Hamerstrom.

FAUNISTICS

(See also Numbers 41, 63, 67)

52. List of the Birds of France. (Listes des Oiseaux de France.) Noël Mayaud. 1953. *Alauda,* **21**(1): 1-63. This inventory of the birds of France will prove useful to an investigator wishing a brief reference to species occurring in France. For the most part the systematic list of families by Mayr and Amadon (*American Museum Novitates* No. 1496, April 2, 1951) has been used for the 431

species listed. Subspecies are listed where differentiated, but are not independently numbered. Each listing includes the scientific name and author, the French common name, and a short statement of status in France and Corsica including a sentence on each of nesting and/or migration where applicable.—L. R. Mewaldt.

53. The Eagle Owl in the Franconian Jura. (Der Uhu *(Bubo b. bubo)* im Fränkischen Jura.) Theodor Mebs. 1953. *Anzeiger der Ornithologischen Gesellschaft in Bayern*, **4**(2): 67-69. At least 16 pairs of these fine birds are resident in the Franconian Alps. They are strictly protected, yet their reproduction is low, partly because of people who cause desertion by climbing the cliffs to their nests or who take the young birds. Infertile eggs are frequent. In eight sets of three eggs, eight eggs were infertile, but this was true of only one egg in four sets of two. From the 32 eggs laid, 16 young hatched, and only seven fledged. Favorite prey are hedgehogs, Carrion Crows, *Corvus corone*, Partridges, *Perdix perdix*, Long-eared Owls, *Asio otus*, and Tawny Owls, *Strix aluco*.—M. M. Nice.

54. The Golden Eagle in Austria. (Der Steinadler in Österreich.) 1953. Eduard Paul Tratz. *Die Vogelwelt*, **74**(5): 161-162. Three decades ago Golden Eagles *(Aquila chrysaëtus)* were on Austria's list of endangered species. At least 85 eyries are now occupied; including non-breeders the present population is estimated at about 200 individuals. The author attributes this increase to more efficient protection, and to the increase of their important prey, the Alpine Marmot, *Marmota marmota*.—Frances Hamerstrom.

55. Occurrence of the White Stork in Oberlausitz. (Zum Vorkommen des Weisen Storches in der Oberlausitz.) 1953. Wolfgang Makatsch. *Die Vogelwelt*, **74**(5): 176-181. Census of storks, *Ciconia ciconia*, since 1945 consisted of counts of breeding pairs, non-breeders, and number of young produced. The percentage of non-breeders in the population varies widely. Also the number of young produced per nest is by no means constant. For example, in both 1949 and 1950 the breeding population was 58 pairs; these fledged only 43 young storks in 1949 as compared to 123 in 1950. Lack of breeding success has been due to: war, shooting of storks (at least 78 shot between 1945 and 1952), destruction or decay of nest sites in buildings and trees, drainage of feeding meadows and ponds, occasional late arrival of breeders, and intraspecific strife.—Frances Hamerstrom.

56. Tawny and Water Pipits in Northern Hessen and in the Rhon. (Brachpieper und Wasserpieper in Nordlichen Hessen und in der Rhön.) Werner Sunkel. 1952. *Ornithologische Mitteilungen*, **4**(10): 217-222.

The author proposes two rules to explain the occasional occurrence of the Tawny Pipit in these areas, one covering the distribution of species when the population is increasing, and the second when the population is decreasing. He postulates: with increasing population a species first occupies favorable breeding areas within its normal range near previously used habitats, then places of less favorable ecological character, or it may then select the most favorable areas outside of, but bordering its normal range. With decreasing population this sequence is reversed, the least favorable areas being abandoned first. Water Pipits in the Rhön normally occur during the winter from October to April but there are some good summer records, probably of non-breeding individuals.—R. O. Bender.

57. The increase in population and the ecological behaviour of the Mistle Thrush in Northwestern Europe. (Zur Massenvermehrung and zum ökologische Verhalten der Mistledrossel [*Turdus viscivorus*] in Nordwesteuropa). Herbert Bruns. 1952. *Ornithologische Mitteilungen*, **4**(5): 97-102. This paper is a contribution to a dispute about the existence of more than one population of Mistle Thrushes in Europe. The author defends the view that a forest population exists in southern and eastern Germany, and an urban population in northeast Germany. These populations are not morphologically different, but are thought to be physiological or ecological races. Underlying the dispute is a deeper disagreement about the relative importance of heredity and environmental factors in racial differentiation. These disputes simply reflect, in the reviewer's opinion, the inadequacy of our facts and theories about the causes and mechanics of the divergence of populations to form races.—R. O. Bender.

58. The birds of the extension-plans of Amsterdam-West in 1953. (De avifauna van de uitbreidingsplannen in Amsterdam-W. in 1952.) J. Walters. 1953. *Limosa*, **26**(1-2): 32-49 (from the English summary). A study of the repopulation by birds of some recently reclaimed lands behind the Holland dykes, showing the succession of faunas following the gradual alteration of the terrain. A graph shows the close correlation between the numbers of breeding pairs present of Ringed Plovers *(Charadrius dubius)* and the amount of suitable nesting territory available.—O. L. Austin, Jr.

FOOD HABITS

(See also Numbers 14, 19, 53)

59. The Eastern Belted Kingfisher in the Maritime Provinces. H. C. White. 1953. Fisheries Research Board of Canada, Bull. 97, 44 pp., 17 fig., 1 map. This report on the food and some life history aspects of the Belted Kingfisher, *Megaceryle alcyon*, in New Brunswick, Nova Scotia, and Prince Edward Island "is based on observations and material collected over a period of many years." Local economic status, migration, flights, dispersal, distribution, nests and nesting, night roosts, enemies, feeding and food are among the subjects dealt with. The food studies include analyses of over 1,300 pellets and stomachs, and the economic consequences of the feeding thus indicated are discussed. Unusual food items include a Water Shrew, *Sorex palustris*. Minute adult and larval aquatic insects in stomachs, recorded by others as food of this kingfisher, are considered by White to be derived from ruptured stomachs of ingested fishes. Published accounts of feeding on large clams and oysters are discounted. It is concluded that in areas where young salmon and trout are scarce because of limited spawning places the kingfisher's feeding may be detrimental. Because much if not most of the bird's feeding is done in areas not frequented by commercially important fishes, and because of its aesthetic value, no reason is seen why it should not be protected—except at fish-rearing establishments and other places where competent investigation shows it to be harmful to fishing interests.—W. Earl Godfrey.

60. Further studies of Long-eared Owl pellets from Amrum. (Weitere Gewöllstudien an Amrunner Waldohreulen [Asio otus (L.)].) H. Kumerloeve and H. Remmert. 1952. *Ornithologische Mitteilungen*, **5**(3): 48-51. Supplementing their previous paper (see B.B. **24**(2): 74) the authors tabulate their analysis of pellets collected during the winter of 1951-52 and the summer of 1952. In about 1,025 pellets they found remains of 769 mammals of 4 species and 104 birds of 3 identifiable species, and 13 invertebrates. In winter the ratio of mammals to birds was 9.0 to 1, in summer 3.5 to 1. The mouse, *Apodemus silvaticus*, was by far the most common prey species, constituting 732 of the 769 mammalian individuals. The House Sparrow, *Passer domesticus*, made up 29 of the 104 birds. Seventy-three bird remains were unidentified.—R. O. Bender.

BOOKS

61. Bird-Ringing / The Art of Bird Study by Individual Marking. R. M. Lockley and Rosemary Russell. 1953. Crosby Lockwood and Son Ltd., 39 Thurloe St., London, SW7, viii + 119 pp., ill., price 9/6. Here is an excellent pocket-size manual that should be on the reference shelf of every American bander. The authors have managed to pack within its covers a great deal of useful, indispensable information. American contributions to the art have been supplied, not altogether accurately, by the junior author, who was onetime executive secretary of the New Jersey Audubon Society. The senior author is one of the most experienced of the British ringers, having ringed, so the jacket blurb tells us, "over 20,000 birds of many species," a total which has been attained by any number of banders in this country; in fact several U. S. stations often band that many in a single season. Nevertheless, though the English may do things on a somewhat

smaller scale than we do, this booklet is evidence that they can do them just as thoroughly and well, if not "bigger and better."

The book starts with a short, abridged history of bird-ringing which gives all the essential facts and most of the highlights, not omitting Jack Miner on this continent, and of course the apocryphal "Boil. Surv. Wash." story which takes on new embellishments with each telling. The next chapter, on the value of bird-ringing, stresses its importance in life-history, behavior, migration, and homing experiments, which are the English specialties. It makes only passing mention of longevity, and none whatever of banding as an invaluable source of vital statistics on bird populations, which is proving rapidly to be the technique's most significant contribution to ornithology.

The chapter on ringing techniques stresses the various methods of color banding and otherwise marking individuals so they can be identified at a distance. Unfortunately the grave danger of using two metal bands on the same leg *(Bird-Banding* **24**(2) : 65) is not mentioned. Wing-marking and feather-dyeing are also described briefly.

Even the most experienced American banders will find suggestions of value in the section on trapping (pp. 32-88) which is amply illustrated, and describes the English methods of trapping and handling birds in detail. It describes all the known basic methods of catching birds alive and unharmed, and many of their variations. The only important omission in this section is the Japanese mist-net, which is far simpler, easier to handle, and in my experience far more effective than the Italian trammel net described.

Not a few of the designs of smaller traps have been adapted from patterns developed in North America. In the description of the clover-leaf trap (p. 45) is the statement that "although originally designed to catch doves, this trap will take waders on the shore or on the edge of a pool. . ." Not that such a minor point matters, but unless my memory fails me this trap was developed as a wader trap, and adapted for taking doves many years later. It is still one of the best of the all-purpose traps, and, contrary to the description, can be built in two or four as well as three separate sections, and made collapsible as well as portable.

Americans will find particularly interesting the descriptions and pictures of the large Heligoland trap and its variants, widely used at coastal and island banding stations in Great Britain; also the condensed but thorough account of waterfowl trapping, from the large, medieval "decoys" into which ducks are lured by a trained dog, to the latest rocket and boom nets.

In the chapter on "rings, records, and field equipment" it is gratifying to find recommended the American terminology for repeats, returns, and recoveries, as well as the Patuxent system for specifying ages. The comments on the use of calls and of live, dead, or imitation decoys, among the oldest and most essential of the wildfowler's tools, suggest techniques almost never used for trapping in this country. The appendix contains an example of a "model life-study by the ringing method," a list of the British Bird Observatories, and a very short, selected bibliography.—O. L. Austin, Jr.

62. The Herring Gull's World. A Study of the Social Behaviour of Birds. Niko Tinbergen. 1953. Collins. St. James' Place, London. 225 pp. Price 18s. Another admirable book in the New Naturalist Series of Special Volumes. Written for the general reader, it is easy, interesting reading. The author gives some background for the study with descriptions of the great gull colonies in the dunes of Holland. The foundation of such a study lies in intensive watching of the animals in the field. "I cannot help thinking that the man who does not have the patience simply to sit and watch for hours, days, and weeks, is not the type of man to undertake a behaviour-study" (p. 64). After this come intelligently-planned experiments and finally comparative studies of related species.

The life of *Larus argentatus* is described in detail—its sense organs, its flocking, fighting, and territory, pair formation, incubation and care of young, and behavior of the chicks. Extensive experiments are described on egg recognition by adults and on pecking at the parents' bill by chicks. The author concludes that: "The most obvious thing about the gull's behaviour is their lack of insight into the ends served by their activities and into the way their own behaviour serves these ends. . . . Thus the chick responds again and again, up to hundreds of times, to a crude

dummy in spite of the fact that the dummy never provides it with food; it just cannot resist the few 'sign-stimuli,'" (p. 232). "Nature has only developed what is necessary, and no more," (p. 234).

There are a six page bibliography, an index of species and authorities, 51 photographs taken by the author, and 58 drawings and diagrams. An exceedingly important book for any one seriously interested in studying birds.—M. M. Nice.

63. The Birds of Japan/Their Status and Distribution. Oliver L. Austin, Jr. and Nagahisa Kurado. 1953. *Bull. Mus. Comp. Zool.*, **109:** 277-637. Map. This long-awaited monograph might be considered a companion volume to the senior author's "The Birds of Korea" (1948), with which it agrees in format and plan. It represents the first complete work in English on the Japanese avifauna (excepting mere check-lists) to appear since Seebohm's classic of 1890, and, consulted in conjunction with S. Uchida's "Newly Illustrated Birds of Japan" (1949), should prove useful to non-Japanese-reading field ornithologists visiting or stationed in Japan.

The authors treat of 415 specific entities, listing under each name the pertinent subspecies (including those considered synonymous with some other) and, when necessary, offering discussion of subspecific variation appearing within the Archipelago. There follows a brief account of the species, dealing with its habitat, range, voice, breeding, and general behavior. For the rarer forms all known specimens and their place of deposit are mentioned.

Scattered through the text are fascinating sidelights on the interrelation of birds and man in Japan, such as the voluntary cooperation of loons with fishermen at Seto (p. 293), the feeding of Shinto priests by cormorants (p. 318), the elevation of the night heron to the peerage (pp. 328-329), the divinity of the ptarmigan (p. 396), and many others.

The authors have quite evidently taken pains to produce a book "as complete and accurate as [they] could make it at the time it was finished," but they have nevertheless failed to list *Pericrocotus japonicus* Stejneger, 1887 (a synonym of the Ashy Minivet, p. 502), and the final word of the last title on page 611 (under "References Cited") is misspelled. These minor slips, however, in no way detract from the importance and value of their work.—H. G. Deignan.

64. Eagle Man. Myrtle Jeanne Broley. 1952. Originally published by Pellegrini and Cudahy, New York; now by Farrar, Straus and Young, New York. xiv + 210 pp. $3.50. This is a popular account of Charles L. Broley's remarkable banding project with Bald Eagles in Florida, pleasantly written by Mrs. Broley. When Mr. Broley discussed his results in "Migration and Nesting of Florida Bald Eagles" (*Wils. Bull.* **59:** 3-20, March 1947), he listed 48 recoveries reported up to April 1946. An appendix to Mrs. Broley's book lists 84. The most remarkable of the 36 new ones is a bird recovered the summer after banding at Lake Winnipeg, Manitoba, the most distant point from which these Florida eagles have yet been reported. A sprinkling of recoveries away from the coastal states adds Arkansas, Kentucky, Ohio, and Minnesota to the states represented. Even with the additional reports, none of the Broley eagles has as yet been recovered in Florida in mid-summer, north of Florida in January, February, or March, or as long as three full years after banding as a nestling.—E. Alexander Bergstrom.

65. Songbirds in Your Garden. John K. Terres. 1953. Thomas Y. Crowell Company, New York. xiv + 274 pp. $3.95. In recent years there has been no lack of books on attracting birds to the home garden, for popular interest in the subject is very widespread. This detailed and workmanlike volume is likely to find many readers. Much of its material has appeared in the column "How to Attract Birds" in *Audubon Magazine*, which has been an effective forum for the exchange of ideas. The author covers a wide range of topics, including birdhouses, bird baths, the care and feeding of fledglings, hummingbirds, and planting for birds. The latter chapter includes detailed lists of suitable trees and shrubs for attracting birds in various parts of the country. Mr. Terres does not assume any advanced knowledge of birds or horticulture on the part of his readers, and he puts together about as much in one package as a general book on attracting birds can. Beyond this, the interested reader necessarily will resort to specialized texts.

The book is not intended for the operators of banding stations in particular, but should be quite useful to them.

To add a few comments on matters discussed by the author, fox wire as a deterrent to squirrels at feeders works very well for the gray squirrel; it is ineffective for red squirrels or chipmunks. The size of fox wire which Mr. Terres recommends has a mesh about 1½" high and 2" wide; the next larger size (2" high by 2½" wide) does admit gray squirrels. Our own experience with a modern house with large glass areas suggests that many injuries are due to a bird seeing through to the other side of the house and not seeing the glass at all. The effect of hitting the glass varies considerably with the weight and manner of flight of the species; for example, mortality in Evening Grosbeaks is higher than in Chickadees, in proportion to the number hitting a window. It is probably inadvisable to feed birds immediately in front of extensive glass areas.

One apparently typographical error appears in the discussion of flicker boxes (p. 47); I doubt that the author meant to recommend drilling several 1" holes (rather than ¼" holes) in the bottom to let out rainwater.—E. Alexander Bergstrom.

66. Finding Nests. Bruce Campbell. 1953. Collins, St. James Place, London. 256 pp. including indexes. 12s. 6d. This interesting book, based on the experiences of the author, his relatives, and the notebook of Arthur Whitaker, focuses attention on a "sport" now in danger of becoming a dead art under conditions of present-day popular field ornithology. Motivating reasons for engaging in this outdoor "sport" are photographing the nest, ringing or banding the young, making a case history from nest-building to departure of the fledglings, or any combination of these with observations on the behaviour of adults and young. The British Trust for Ornithology has courteously permitted reproduction of its "Nest Record Card" for use for visits to a single nest, and also its card for a single visit to a colony.

In graphic language Mr. Campbell explains the various techniques involved. "Cold" searching enables the hunter, preferably possessing some knowledge of habitat and nesting behavior, to uncover many nests just by exploring. "Hot" searching ensues when a sitting bird flushes and thereby indicates a nest at hand. At times, as in the case of the Lapwing which rises while the hunter is still far distant, the two methods merge. For bush work a long stick facilitates prodding operations. Nests stand out well in silhouette against the sun, the more so if the observer can look upwards. A mirror attached to one end of the stick permits easy examination of the nest with minimum disturbance. In open country rope dragging is effective and, in the author's opinion, doubtfully injures nests. Blinds are useful at times. Even the use of a stuffed bird may bring about giveaway reactions. An entrance door facilitates the study of woodpecker and similar nests. Likewise a torch is a valuable accessory. Meritorious is the exposition on the art of tree-climbing.

For the purposes of this study the author segregates birds into 12 principal groups commencing with small passerines and carrying through to sea birds, waders, and pigeons and game birds. Each section contains an introductory discussion describing the similarities and differences between the birds treated therein as pertinent to the main subject, and, where possible, the particular methods of nest finding applicable. Each of the 184 specific accounts is treated under the headings of Distribution in Great Britain, Season, Habitat, Nest-site, and Methods of locating the nest. There is also brief mention of 36 other native species and two introduced forms.

Much information on nest construction, eggs, incubation, and young is, of course, readily available to students. This book, however, by consolidating the essential information into one compact and handy volume, provides a stimulus to make first-hand studies. The ultimate potentialities which can result from these and accompanying behavior studies are practically unlimited.—Wendell Taber.

67. A Guide to Bird Finding West of the Mississippi. Olin Sewall Pettingill, Jr. Illustrated by George Miksch Sutton. 1953. Oxford University Press, New York. xxiv + 704 pp. 35 line cuts. $6.00. This book, companion to "A Guide to Bird Finding East of the Mississippi" (see *Bird-Banding*, **23**: 53), is

invaluable to the bird-minded tourist who wants to become acquainted with as many new species as possible. The author has taken great individual care to obtain excellent coverage of the territory. Further, over 300 persons, including government officials, have supplied data and verified his presentation of their material. His tests for choice of places mentioned are: species of birds available, important concentrations of breeding or wintering birds, representative types of habitat, and the widest possible diversity of birds existing near large metropolitan areas and vacation centers. He customarily omits the more common species, as well as those of uncertain status or of highly specialized environment. With the accent on sight records, he wisely ignores subspecies for the most part.

The introduction to each state describes its outstanding features and discusses its physiographic regions and ecological communities as related to bird life. The author then elaborates upon a few outstanding localities. Of particular interest are his comments on winter birdlife, and on principal migration routes which at times have local peculiarities. He indicates the relationship, if any, of these routes to the hypothetical continental "flyways." A series of inclusive dates indicates probable peak migration flights in most localities. With forethought, he mentions in the appropriate place almost every society or institution of any type which possesses ornithological interest.

A short section covers a wide diversity of reference material. The index combines into one list bird names, localities, and the names of ornithological institutions and societies.

With skilful choice the book covers the 2,100,000 square miles of area in the 22 western states, an area some two and a half times that of the 26 states treated in the eastern work. Geographical changes in the West tend to be sudden, sharp, and clear-cut. At the same time distances are large, and the sameness over a vast area can sometimes become tedious. To cover completely so extensive a territory is a practical impossibility in a book of this type, and the by-passing of large areas does not necessarily mean that the bird life therein is limited or uninteresting. Further, the low density of ornithologists per square mile as compared with the East suggests the possibility that many fine birding localities remain undiscovered.

The author's exclusive use of the common or vernacular bird names, perhaps necessary in this type of a Guide, is confusing at times, as in the case of the Black-capped Warbler, a subspecies of the eastern Wilson's Warbler. A tabulation of the common names with their scientific equivalents would have been of value.

The foregoing minor criticisms detract not in the least from the great worth and usefulness of this valuable Guide. Possibly its greatest value may lie in the future in connection with making comparisons of changing habitat and its effect on bird life. Latest records show our population has increased to 160 million from 150.7 million in 1950, and the U. S. Census Bureau forecasts 221 million by 1975. Major ecological changes seem a certainty.—Wendell Taber.

68. Social Behaviour in Animals. With Special Reference to Vertebrates. N. Tinbergen. 1953. London; Methuen & Co. Price 12*s.*6*d.* New York; John Wiley & Sons. Price $2.50. 155 pp. A study of cooperation between individuals, starting with the pair and extending to the group. The social behavior of three species is described—Herring Gull, Three-spined Stickleback and Grayling Butterfly. Four types of social cooperation among animals are examined: (1) where male and female come together only for mating; (2) where one or both parents care for the young; (3) where association extends beyond the family into group life; and (4) fighting, which is useful to the species in spacing individuals. Social cooperation is analyzed. It "seems to depend mainly on a system of releasers. The tendency of the actor to give these signals is innate, and the reactor's responses are likewise innate. Releasers seem always to be conspicuous, and relatively simple," (p. 85).

Releasers are also effective between different species, as the colors and scents of flowers that attract insects, warning colors to ward off attack of predators. and cryptic coloration to avoid releasing attack. Growth of social organization is discussed, as well as its evolutionary aspects. The final chapter provides excellent "Hints for research in animal sociology." Dr. Tinbergen emphasizes the great

contributions in this field that have been made and can be made by amateurs who are serious yet unprofessional naturalists. There are a bibliography of 119 titles, an index of species and authors, 8 plates and 67 figures, many of them line drawings from motion picture film.

This book cannot be too highly recommended. In simple, clear English it covers the field and provides a thought-provoking, illuminating guide to further research on the social behavior of animals—M. M. Nice.

69. Those of the Forest. Wallace Byron Grange. 1953. Flambeau Publishing Co., Babcock, Wis. 314 pp. $4.75. A wonderful picture of the life of a wilderness forest throughout the year with a brief sketch of its history throughout geologic ages. With a snowshoe hare as the central figure, we read of trees and birds, of insects and many other animals and plants; we learn how they affect one another and how the weather affects them all—a most illuminating and absorbing presentation of biology and ecology. In regard to the difficulties and dangers of the rabbit's life, the author writes: "Is not struggle necessary? . . . Could life exist if it were deprived of its daily challenges? Is the cry of life throughout the forest a cry lamenting struggle or one rather that cries out for life itself—for life in which further to meet adversity?" (p. 262). The rich and varied life of the plants and animals of the northern forest is vividly portrayed. The ever-recurring theme of the book is this: "No one of them is alone. . . . All contribute to the unbroken, timeless continuity which is life—not the life of one, but the life of all. Partaking of the lives of one another, they are somehow welded to a unity of association which may appear predatory today, but which is clearly symbiotic in total, for the community is self-renewing and endures all apparent conflict," (p. 199).

The drawings of Olaus Murie add to the charm and value of this unique book. It is to be hoped it will have a very wide sale for its message is of the utmost importance.—M. M. Nice.

NOTES AND NEWS

It is unusual for *Bird-Banding* to contain a paper so long that it must be run in installments, but exceptions have been made from time to time in order to handle a long paper of particular interest and importance. In 1946 and 1947 Mr. J. A. Hagar's paper on the Black Duck in Massachusetts was presented in several sections. The Tree Swallow paper starting in this issue will be continued in one or two further installments, including a bibliography. The author, Mr. Raymond A. Paynter, Jr., is now Assistant Curator of Birds in the Museum of Comparative Zoology in Cambridge, and was recently elected to the Council of the Northeastern Bird-Banding Association. Readers will recall his paper on "The Fate of Banded Kent Island Herring Gulls" in our October, 1947 issue.

To the long list of topics suitable for general notes in *Bird-Banding* can now be added data on leg sizes, along the lines suggested by Dr. Blake in our January issue. The technique is simple enough for use at any banding station, and the value of data (even on common species) from a large number of stations would be great. In the editor's brief experience with the gauge, it is not difficult to obtain a measurement accurate to .1mm or less in most cases, the most obvious pitfalls being a measurement not taken at the smallest part of the tarsus, or one taken of the greater diameter with the axis of the gauge not perpendicular to that side of the tarsus.

The spring field meeting of the Northeastern Bird-Banding Association will be held on Saturday, June 19, at the home of Mr. L. B. Chapman in Princeton, Mass. All those interested in banding will be welcome; the station includes a flourishing Tree Swallow colony. To reach Princeton village, take routes 2 and 31 (or 9, 140 and 62) from the Boston area; take 122A and 31 from Worcester; from New York City and Hartford, take route 31 from Charlton City, leaving route 20. To reach the meeting from Princeton village, take route 62 toward Barre; about three miles from the village turn sharp right just before route 62 crosses a railroad; go one mile to a crossroads; turn right and go one mile to a sign "Wild Acres—L. B. Chapman." The meeting will be held in the forenoon and early afternoon.