

**Records of Butterflies being used as Food by Birds.**—In a note to *Bird-Banding* 19 (1): 21-22, 1948, Mr. Oscar M. Root mentions seeing a Black-throated Green Warbler eating a Clouded Sulphur Butterfly. He goes on to cite a reference from *Wild Birds at Home*, Herrick (1935). Herrick mentions several species of birds seen taking butterflies, but regards these cases as exceptional. In view of the scarcity of records on this subject, it might be worthwhile to mention an additional observation. On June 26, 1948 a Red-eyed Vireo, *Vireo olivaceus* was seen perched on the limb of a tree eating a Tiger Swallowtail, *Papilio turnus*. This observation was made by Samuel A. Eliot, Jr., Davis Crompton and me at Dixville Notch, New Hampshire. The wings of the butterfly were rejected and spiralled down to the spot where we were watching. Frank Finn, *Bird Behavior* (pp. 75-76), writing on the subject of birds attacking butterflies, states that "no bird is known as the 'butterfly-catcher' anywhere, though we have 'bee-eaters' and 'fly-catchers,' and though moths are ravenously pursued. . . . This is not to say that birds never eat butterflies, but that these do not form a common prey; in India I certainly did not see a bird attack or possess one oftener than once a year on the average, though particularly on the look-out for this, and the American investigations on the food of birds showed that in 40,000 stomachs of insectivorous birds four butterflies only were found."—John V. Dennis, Moose Hill Sanctuary, Sharon, Massachusetts.

**Another Cause of Mortality in Land Birds.**—In a limited search of literature on the causes of mortality in North American land birds I could find no mention of something that I have recently observed. In the rural areas throughout the United States an immense number of unpaved or hard surface roads are to be found. These usually consist of country roads or streets in urban areas. In order to preserve and increase the durability of these streets and to keep the dust down, road oil, a substance which is in a semi-liquid form, is applied. In the rural areas during mid summer, water is sometimes scarce and this is the time of the year that road oil is applied. The birds appear to be attracted by their reflection in the liquid and attempt to bathe, with disastrous results. A typical example is when on June 28, 1948 in Scott County, Iowa I found an immature Red-winged Blackbird, *Agelaius phoeniceus*, which had attempted to bathe in a puddle of this oil. The bird's feathers were matted so badly that it was unable to fly or even walk on the ground. Some portions of the body were minus the feathers. Undoubtedly a large number of our land birds in rural areas perish each year in this manner. Once more, under the rays of a June and July sun, a small depression in the road filled with road oil which was solid becomes liquid, thus making it dangerous for the birds during the breeding season.—James Hodges, 3132 Fair Avenue, Davenport, Iowa

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## RECENT LITERATURE

Reviews by Donald S. Farner and others

### BANDING

(See also Numbers 6, 9, and 10.)

**1. Bird-banding by the Museum of Natural History of Göteborg in 1946.** (Göteborgs Naturhistoriska Museums Ringmärkningar av flyttfåglar under 1946.) Viking Fontaine, 1947. *Göteborgs Naturhistoriska Årstryck*, 1947: 82-106. During 1946 in Sweden, 128 cooperators banded 14,064 birds in 146 species. Since the beginning of bird-banding under this system, in 1911, 173,613 birds in 212 species have been banded; the total recoveries and returns since 1911,

is 4,890. Among the species banded in greatest numbers in 1946, were the Black and White Flycatcher, *Muscicapa atricapilla* (Linnaeus) 1,724; Great Tit, *Parus major* Linnaeus, 1,756; Starling, *Sturnus vulgaris* Linnaeus, 1,063; Black-headed Gull, *Larus ridibundus* Linnaeus, 530. During 1946 there were 275 recoveries and returns. Among the interesting records is that of a Blackbird, *Turdus merula* Linnaeus, banded at Malmö, Skåne, 10 July 1940, was recovered at the banding locality 18 July 1946. Nine female Black and White Warblers banded at "Brånsta, Kumla s.m, Närke" during the summers of 1944 and 1945, were retaken at the banding locality. There are 11 records of Swifts, *Apus apus* (Linnaeus), banded at various localities, 1941-1945, recovered or retaken, in each case, at the banding locality.—D. S. F

**2. A Second Preliminary List of Recoveries of Birds Banded in Greenland.** (Anden foreløbige Liste over genfundne grønlandske Ringfugle.) Finn Salomonsen. 1948. *Dansk Ornithologisk Forenings Tidsskrift*, 42(2): 100-102. Included are recoveries of 16 White-fronted Geese, *Anser albifrons gambelli* Hartlaub; 14 were from Ireland, one from Iceland, and one from Scotland. Also of interest is the record of the Greenland Wheatear, *Oenanthe oenanthe leucorrohoa* (Gmelin), banded 1 July 1947 at Sarqaq-Dalen, Nûgssuaq Halvøen, Jakobshavn Distrikt, and recovered at Chaves, northern Portugal, 18 October 1947.—D. S. F.

## MIGRATION

(See also Numbers 1, 2, 14, 26, 41, and 85.)

**3. The Snowy Owl Migration of 1945-1946. Second Report of the Snowy Owl Committee.** Prepared by L. L. Snyder. 1947. *The Wilson Bulletin*, 59(2): 74-78. According to reports received from "literally thousands of people" through a geographically distributed committee of fifteen ornithologists, the invasion of Snowy Owls, *Nyctea scandiaca* (Linnaeus), in 1945-46 "may have involved more owls than any other flight on record." A total of 14,409 occurrences were reported, 7,280 of them from the area reporting 2,363 in 1926-27. Unfortunately, the absence of a common denominator of observation intensity makes these figures quite uncomparable. It seems to this reviewer that if such figures are to hold significance as quantitative data, attempts should be made to standardize the survey technique and to conduct the survey on an annual basis. A map of North America showing the concentration of observations in three degrees of shading forms the major contribution of the paper; this might have been more useful if it had been produced as a spot map and on a larger scale.—John T. Emlen, Jr.

**4. Migration, Reverse Migration, and Sleeping Places of the White Wagtail in Fall at the Ornithological Station Ottenby, Southern Sweden.** (Sträck, återflygning och övernattning hos sädesärulan (*Motacilla a alba* L.) under hösten vid Ölands södra udde.) Göran Bergman. 1948. *Vår Fågelvärd*, 7(2): 57-67. This paper is based largely on data obtained by the author at Ottenby from 13 September 1948 to 17 October 1948. Wagtails, at the beginning of migration, show only a slight tendency to fly out over the sea, the birds returning to the resting places after a few trials. Maximum migration comes in mid-September. At this time, migration during the early morning is very active with the birds flying out to sea; simultaneously, flocks return flying towards the northwest. Many flocks do not forsake the coast but rather fly along the coast towards the northwest. The direction of the Wagtails flying out from the north or northwest, when they reach the southern tip of the peninsula, is usually SSW. The direction of those which begin from resting places on the southern tip of the peninsula is due south. Morning migration activity begins about 10:40; about 5:00-6:00 P.M. there is a migratory and activity maximum. Reverse migration,

which has also been noted in Finland, is thought to be stimulated by the strange appearance of the sea to the bird. Reverse migration (*äterflygning*) was noted among both young and adults; birds returned during the late morning. Reverse migration decreases in intensity as the migratory period progresses.—D. S. F.

**5. Migration and Nesting of Florida Bald Eagles.** Charles L. Broley. 1947. *The Wilson Bulletin*, 59(1): 3-20. This paper represents a large amount of field work and constitutes a notable addition to our knowledge of the Bald Eagle, *Haliaeetus leucocephalus leucocephalus* (Linnaeus). A total of 814 young eagles were banded in their nests between 1939 and 1946. Forty-four of these birds were recovered, thirty-seven of them from points north of the Florida state line, one third of them from distances of over one thousand miles. Flights were northward in the spring after completion of nesting in April or May, and back again in September and October. This interesting migration had not been previously suspected and is notably different from that of northern Bald Eagles. One hundred and forty nest sites, most of them close to the gulf coast, contributed records for 619 nestings during the eight years of the study. Territories of about one mile in diameter, sometimes less, were defended; the birds regularly returning to and remaining within their territory boundaries even in years when disturbances made it impossible for them to nest there. Several nests were known to have been in more or less continuous use for 40 to 45 years. The size and shape of nests varied considerably and generally grew with age; the largest nest measured nine and one-half feet wide by twenty feet deep. Eggs, generally two, but occasionally one or three, were laid in a small depression about twenty inches in diameter and typically lined with Spanish moss or grasses. The eggs of a clutch were apparently laid in the usual close succession in most cases but were separated by intervals of from two to three weeks in a few instances. Enemies were relatively few. During the six years from 1941 to 1946 from 17 to 30 percent of the nests failed to produce young except in 1945 when 41 percent failed as a result of the 1944 hurricane. The principal cause of nest failure outside of the hurricane was Great-horned Owls which in 31 instances took over the nests either before the eagles had returned from the north, or about the time they started to lay. In one instance owls took over after the eagles had been incubating ten days; in another case a nest incubated by an owl contained one eagle and one owl egg; in a third nest an eagle and an owl were found incubating their separate clutches on a nest within three feet of each other. In 45 nesting territories, in 1944, eagles returned to find their nests destroyed by the hurricane. New nests were built in "time for normal nesting" but, significantly, none were successful: in 24 no eggs were laid, in 21 the eggs were laid but did not hatch.—John T. Emlen, Jr.

**6. The Homing of Transplanted Young Wood Ducks.** Robert A. McCabe. 1947. *The Wilson Bulletin*, 59(2): 104-109. One hundred young Wood Ducks, *Aix sponsa* (Linnaeus), hatched from wild eggs and raised to seven weeks of age, were transported 200 miles from Havana, Illinois to an area near Madison, Wisconsin from which the species had been absent as a nesting species for 50 years. At least 30 of the birds after being released in mid-August of 1944 remained for from two to two and a half months; a few remained over winter. Evidence for five nestings was recorded in the spring of 1945 and for two in 1946. At least two of the breeding females were marked birds of the release. None of the transported birds was subsequently reported from the production site of the eggs in Illinois. Similar results were obtained in a similar transplant of birds to Indiana.—John T. Emlen, Jr.

**7. The Fall Migration of Crows in Switzerland and in southern Germany.** (Ueber den Herbstzug der Krachen in der Schweiz und in Süddeutschland.) Ernst Sutter. 1948. *Der Ornithologische Beobachter*, 45(4): 135-150. This paper is the product of an extensive cooperative effort involving many

observers. The data concern "almost exclusively" the Rook, *Corvus frugilegus* Linnaeus, and the Jackdaw, *Coloeus monedula* (Linnaeus), although to a lesser extent the observations involve also the Carrion Crow, *Corvus corone corone*, Linnaeus, and the Hooded Crow, *Corvus corone cornix* Linnaeus. Migration of Crows in this area in fall is in a southwestward direction and on a broad front.

—D. S. F.

**8. The Bohemian Waxwing in Switzerland during the Winter of 1946-1947.** (Le Jaseur boréal en Suisse pendant l'hiver 1946-1947) P. Géroudet. 1948. *Der Ornithologische Beobachter*, 45(1): 1-5. This is a summary of the records accumulated during the Waxwing invasion of the winter 1946-1947. Numbers up to 100 were observed from 20 December to 4 March. Most of the observations were recorded in January. A series of observations from southern Germany (Baden, Wurtemberg, Bavaria, and Schwabia) conforms with this pattern.

—D. S. F.

### LONGEVITY AND MORTALITY

(See also Numbers 1, and 51.)

**9. Longevity in Starlings.** (Die Lebensdauer des Stares.) David Lack and A. Schifferli. 1948. *Der Ornithologische Beobachter*, 45(3): 107-114. The annual mortality rate for adult *Sturnus vulgaris* Linnaeus in Switzerland, based on dead recoveries of 306 birds banded as young, is 66 percent compared to 52 percent for British Starlings. The authors believe that this corresponds with the slightly larger and more numerous broods of Swiss Starlings as compared to British Starlings. Average expectancy of life on first January is 1.4 years for British Starlings compared to 1.1 years for Swiss Starlings. Mean annual mortality rate for the first year starting with the date of banding is 73 percent for Swiss Starlings and 66 percent for British Starlings; for the second year, calculated from the first anniversary of the date of banding, the rates are 62 percent and 55 percent.—D. S. F.

**10. Some Remarks Concerning the Natural Longevity of the Rook and the Common Heron.** (Quelques remarques sur la longévité dans la nature du Freux et du Héron cendré.) F. Bourliere. 1947. *L'Oiseau et la Revue Française d'Ornithologie*, 17(2): 178-181. Analysis of 121 records of Rooks, *Corvus frugilegus* Linnaeus, banded as young and subsequently recovered dead, reveals life expectancies, on the first, second and third January firsts, of 1.7, 1.3, and 1.1 years. For the common Heron, *Ardea cinerea* Linnaeus, 177 records indicate corresponding expectancies of 2.9, 2.5, and 2.5 years for the first, second, and third January firsts. The author raises the possibility that persecution may account for decreasing expectancies.—D. S. F.

**11. Longevity of Chaffinch.** John Hope. 1948. *British Birds*, 41(2): 52. A male *Fringilla coelebs gengleri* Kleinschmidt, known by a lumpy foot, a long bill, and great tameness has come to a home in Lincolnshire, even entering a bedroom window for food, for fifteen and one half years.—M. M. Nice.

### PHYSIOLOGY

(See also Numbers 28, 84, 85, and 93.)

**12. Seasonal Fluctuations in Weights of Penguins and Petrels.** L. E. Richdale. 1947. *The Wilson Bulletin*, 59(3): 160-171. Many weights were taken of Yellow-eyed Penguins, *Megadyptes antipodes* (Hombron and Jaquinot), Broad-billed Prions, *Pachyptila vittata* (Forster), and Diving Petrels, *Pelecanoides urinatrix* (Gmelin), during frequent visits to colonies on the Otago Peninsula,

New Zealand, from 1936 to 1946. During the latter year weights were taken on the penguins at seven-day intervals from a point 56 days before laying to the end of the "guard" stage, 48 days after hatching. Tables and graphs are presented for each sex showing a weight peak 36 to 42 days before laying in males, 29 to 35 days before laying in females. Weights then drop as the birds abandon their fishing at sea to a low point about the time the eggs are laid; a weight increase occurs during incubation, followed by a decrease while the young are being fed. Weights for the two petrel species are grouped into four and two categories respectively, by season; they show a high during the winter months and a low during the chick-feeding stage. The trends indicated by these data are compared with published records on other species and are thought to conform with Wolfson's data on migratory Juncos. Considerable emphasis is placed on a late winter (pre-nesting) increase which, unfortunately, is not clearly visible in the data presented. The deductions reached are interesting but poorly supported by data. No figures except those of the 1946 nesting season study are presented. References to fat deposition and gonad growth are unsupported by data. An attempted correlation of weight changes with molt rests on a mere statement that "the heaviest weight of the yearly cycle is attained just as the molt commences, but on completion of the molt the birds register the minimum weight for the year." The most significant correlation cited seems to be with the behavior changes of the birds: a loss as they give up marine fishing to establish nests; a gain as they become less active during incubation (both sexes) and a loss as they resume fishing but deliver the bulk of their catch to the young.—John T. Emlen, Jr.

**13. The Molt and Gonad Cycles of Three Species of Birds at Five Degrees South of the Equator.** R. E. Moreau, A. L. Wilk, and W. Rowan. 1947. *Proceedings of the Zoological Society of London*, 117(2/3): 345-364. This paper contains an interesting series of observations made at Amani, Tanganyika Territory, 1938-1939. The species involved are the Black-capped Bulbul, *Pycnonotus xanthopygos micrus* Oberholser; Yellow-streaked Bulbul, *Phyllastrephus flavostriatus tenuirostris* (Fischer and Reichenow); and Mouse-bird, *Colius striatus mombassicus* van Someren. "Molt is regular, concentrated and seasonal in both Pycnonotidae; 'early' stage and even 'mid' stage of wing-molt are found in both these birds concurrently with enlarged testes and free sperms. These conditions do not seem to have been reported before for small passerines. In *Colius* molt is irregular and proceeds indefinitely irrespective of testis-state . . ." (p. 363.) In all three species the testes reach their maximum development in September-March after which they regress rapidly and remain at a minimum until August; this resting period corresponds with the season of the "long rains." "Recrudescence takes place when there has been practically no increase in temperature above the annual minimum and day-length is increasing at less than 20 seconds a day." (p. 363.) "In final analysis it seems to Rowan advisable not to rule out the effects of the increases in day-length at 5° S., small as they are. Moreau still cannot envisage a daily increment of a few seconds as effective. In spite of a great deal of current research work . . . , too little is as yet known of the general effects of extension of daily activity on the physiology of birds, to justify positive opinions." (p. 361.)—D. S. F.

**14. The Distant Orientation in Birds.** (Über das Problem der Fernorientierung bei Vögeln.) Sven Dijkgraaf. 1947. *Österreichische Zoologische Zeitschrift*, 1(3/4): 314-324. The author gives a brief review of the problem from the literature to 1944. He built a 12-sided cage 120 cm. across, illuminated by an internal, central light. At its center was a gauze chamber from which a bird could be released by lifting the chamber by a cord. The problem was for the bird to find a food dish which was concealed behind a uniform circular fence near the edge of the cage south of the center or behind a small door in one of the sides. The birds used, were one each of *Chloris chloris* (Linnaeus), *Chrysomitris spinus* (Linnaeus),

and *Sturnus vulgaris* Linnaeus. None of these could learn the direction of south and by dividing the cage into quadrants by screens it was shown that the choice of starting direction was random. The starling was conditioned to go to a door at which a slight scratching noise was made and did so quite accurately, even in the dark. When the right door was marked by a  $1\frac{1}{2}$  mm. black dot, the bird learned to go to it and continued to do so after the dot was removed, having learned some minimal visible peculiarity of the door. The author concludes that his birds responded only to *visible* or *audible* stimuli and feels that such stimuli are operative in other cases. He suggests orientation over the ocean by direction of wave fronts and by sun position over land.—C. H. Blake.

**15. The Deep Diving of the Loon and Old-Squaw and its Mechanism.** A. W. Schorger. 1947. *The Wilson Bulletin*, 59(3): 151-159. Commercial fishermen on Madeline Island in Lake Superior take Old-Squaw Ducks, *Clangula hyemalis* (Linnaeus), in their nets at depths of 70 to 90 feet, and Loons, *Gavia immer* (Brünnich), at depths up to 180 feet. The numbers of birds taken are large; one operator took 27,000 Old-Squaws in Lake Michigan in the spring of 1946. The literature of deep diving and of the mechanisms and physiology of diving in birds is reviewed; a bibliography of 35 titles is included.—John T. Emlen, Jr.

**16. Seasonal Bill Variation in Tree Sparrow.** P. A. Clancey. 1948. *British Birds*, 41(4): 115-116. Specimens of *Passer montanus* Linnaeus taken from late May to July "have the bill noticeably attenuated," in comparison to fall and winter birds. Apparently the same is true of House Sparrows, *Passer domesticus* Linnaeus. This appears to be "correlated with the seasonal change in diet; a bill of such proportions presumably being more advantageous in the rapid acquisition of insect larvae, imagines, etc., upon which the young are reared."—M. M. Nice.

**17. Swamp-Harrier's Sense of Smell.** Michael Sharland. 1947. *The Emu*, 47(2): 81-83. Several observations made from a blind, prompt the author to feel that both the young and adults of *Circus approximans* Jardine and Selby possess and use a sense of smell. There is no experimental verification however.—D. S. F.

**18. Luminosity in Birds.** W. L. McAtee. 1947. *The American Midland Naturalist*, 38(1): 207-213. This paper is principally a selected bibliography of 53 papers dealing with luminosity in birds. Most of the reports attribute the phenomenon to barn owls and herons. The author accepts the authenticity of the phenomenon although his attempts to observe it have been unsuccessful.—D. S. F.

## FOOD HABITS

(See also Numbers 45, and 73.)

**19. The Food of Jaegers.** (Materialen zur Oekologie der Landwirbeltiere der Tundra des südlichen Jamal.) T. Dunajewa and V. Kutscheruk. 1941. *Materialen zur Kenntnis der Fauna und Flora Russlands*, 4 (Neue Serie). The Long-tailed and Parasitic Jaegers, *Stercorarius longicaudus* Vieillot, *Stercorarius parasiticus* (Linnaeus), are abundant breeders on the Jamal Peninsula. In spring and late summer they feed largely on berries which they gather on foot; in early summer they take animal food, largely rodents but some young birds. They breed only in those years when rodents are abundant on the tundra. (From the abstract from the Russian by Hermann Grote in *Beiträge zur Fortpflanzungsbiologie der Vögel*, 17:177. 1941.)—M. M. Nice.

**20. The Normal Food of Tropic Birds.** C. A. Gibson-Hill. 1947. *The Ibis*, 89(4): 658-661. Stomach analysis of *Phaethon rubricauda westralis* Mathews, *Phaethon*

*lepturus lepturus* Daudin, and *Phaethon lepturus fulvus* Brandt collected on Christmas Island and the Cocos-Keeling Islands, Indian Ocean, show the normal food to be bony fishes and cephalopods. Although the natives attributed the attacking of other birds to *westralis* this does not appear to be the case; perhaps it has been inspired by the red bill of this form. The Somali's of Africa attribute a similar story to *Phaethon indicus* Hume; this species also has a red bill.—D. S. F.

**21. Feeding Habits of the Short-Tailed Shearwater (Mutton-bird).** F. Lewis. 1946. *The Emu*, 45(3): 225-228. This paper shows conclusively that alleged eating of gravel as ballast by young Mutton Birds, *Puffinus tenuirostris* (Temminck), is unfounded. The small amount of such material taken, could be of no such consequence, amounting to about 0.003 percent of the total weight of the bird.—D. S. F.

**22. The Stomach Contents of Young Mutton Birds.** K. A. Hindwood. 1946. *The Emu*, 46(1): 71-73. The author points out certain published data on the food habits of young Mutton Birds overlooked, and to a considerable extent duplicated by Lewis in the paper reviewed above.—D. S. F.

**23. The Food and Distributional Ecology of the Herring Gull.** (Till gråtrütens (*Larus a. argentatus* Pont.) närings-och spridningsekologi.) Gunnar Otterlind. 1948. *Fauna och Flora*, 1948 (3/4): 116-137. The data on which this paper is based were obtained on the small island, Hallands Väderö, on which about 3000 pairs of Herring Gulls nest. Stomach contents of ten adults and 122 young, as well as 179 pellets, were examined; these were obtained during the breeding season. Fish, probably mostly discarded by fishermen, were the principal item. Other important items were meat scraps and other refuse, mollusks and insects (mostly beetles). There were no conspicuous age differences. The only birds used as food were Starlings, *Sturnus vulgaris* Linnaeus, and Common Eiders, *Somateria mollissima* (Linnaeus); these were minor items. However, Herring Gulls were observed to kill young eider ducks. The author feels that extensive egg collecting has forced the birds from the skerries to the more protected breeding areas on the mainland. In Sweden and Finland, where the intertidal zone is lacking, Herring Gulls have become dependent on culture through feeding in refuse dumps.—D. S. F.

**24. The Food Habits of the Barn Owl based on Analysis of Pellets.** (Sløruglens (*Tyto alba guttata* (Brehm)) Føde, belyst gennem Undersøgelser af Gylp.) Halfdan Lange. 1948. *Dansk Ornithologisk Forenings Tidsskrift*, 42(2): 50-84. This excellent study is based on the analysis of about 14,000 pellets collected during 1932-1943 in 32 localities in southern Jutland, one locality in Fyen, three localities Sjaelland, and one locality in Lolland. In the course of the investigation 38,899 animals were identified. Of particular interest is the variation in food habits with respect to ecology of the collecting locality. For all of Denmark the data show the diet to consist of shrews (38 percent), voles (22 percent), house mice (21 percent), field mice (*Apodemus*) (10 percent), birds (5 percent). Comparison of the composition between Jutland and the Danish Islands is as follows: shrews (45 percent on Jutland, 30 percent on the islands) voles (17 percent, 25 percent), house mice (18 percent, 27 percent), field mice (9 percent, 11 percent), birds (7 percent, 3 percent). For all Denmark a comparison is made between winter and summer diets: shrews (34 percent in summer, 35 percent in winter), voles (22 percent, 21 percent), house mice (20 percent, 31 percent), field mice (16 percent, 7 percent), birds (6 percent, 4 percent). It is suggested that the consistently large numbers of shrews in the diet may be explained "by the fact that the Barn-owl traces its prey by hearing." (p. 77.) The insect remains, found in the owl pellets are believed to have come from the stomachs of sparrows on which the owls have fed.—D. S. F.

**25. The Food of a Wintering Shrike.** (Talvehtivan lopinharakan saaliista.) Olavi Leivo. 1942. *Ornis Fennica*, 19(3): 65-73. The observations were made on a single male *Lanius excubitor excubitor* Linnaeus near Helsinki from 20 December 1936 to 4 April 1937. Principal source of food was *Microtus agrestis*; less frequent items were other small rodents, shrews, and small birds. Hunting success was best (1.2 animals per day) with a light snow, poorest (0.3 per day) with heavy snow, and intermediate (0.6 per day) with snowless patches.—D. S. F.

**26. Notes and the Food Habits of Birds during Migration.** (Über die Ernährungsweise der Vögel während der Zugzeit.) Sven Nordberg. 1942. *Ornis Fennica*, 19(3): 85-88. This is an interesting series of notes concerning 26 species made during spring and fall of 1933 and the falls of 1934 and 1935 on the Åland Islands.—D. S. F.

**27. The Assessment of the Food of Birds.** P. H. T. Hartley. 1948. *The Ibis*, 90(3): 361-381. This is an excellent critical consideration of the various methods of analysis of food habits: numerical methods, gravimetric methods, and volumetric methods. In general, whereas there are qualitative data for most species, adequate quantitative data are available for few. Many studies are based on inadequate samples; in some species truly adequate samples are not possible. None of the three prevailing methods can be regarded as ideal. With a few exceptions, the true "economic status" of most species cannot be decided because of lack of knowledge of ecology of the species.—D. S. F.

#### NIDIFICATION AND REPRODUCTION

(See also Numbers 5, 12, 13, 44, 47, 48, 52, 53, 58, and 90.)

**28. Oological Studies in Gulls. I. Egg-Producing Power of *Larus argentatus* Pont.** Finn Salomonsen. 1939. *Dansk Ornithologisk Forenings Tidsskrift*, 33(3): 113-133. Experiments were carried out on the island of Graesholme, "a scientific bird-sanctuary to which all entrance is prohibited;" eggs were taken from some 65 pairs of Herring Gulls every two days, each nest being given a numbered label. A few pairs in the experimental field were left undisturbed, "in order not to make the birds suspicious." The pairs remained on their territories, some building new nests, while others, especially those on the cliffs, continued to lay in the old nests. They continued to lay for almost two months, the average period between eggs being 3.2 days. "A very large number of nests (140 out of 340) are deserted after the 1st egg has been removed, a fairly large number are deserted after the 2nd and 3rd egg, but several are not deserted until 4-7 eggs have been removed, and a few not until 8-16 eggs have been taken." "The average number of eggs laid by a female is estimated to be 13." An increase in temperature was followed by an augmentation of egg production 10 to 12 days later. References are given to the literature on "egg-producing powers" of birds.—M. M. Nice.

**29. The Incubation and Fledging-Periods of the Razorbill.** J. Keighley and R. M. Lockley. 1948. *British Birds*, 41(4): 113-114. The average incubation-period of eighteen eggs of *Alca torda britannica* Ticehurst on Skokholm was 34.3 days with extremes of 33 and 36 days. "The average fledging-period of the eighteen chicks was 15.7 days, with extremes of 12 days and 18 days 20 hours." "Thirty-two (64 percent) of the eggs were lost; the majority of these were on exposed ledges where they could be easily spotted and taken by predators. Eighteen (36 percent) of the eggs hatched, and not one of the chicks was lost, this being due to the fact that they were hidden under boulders and were safe from the predatory gulls which patrolled the cliffs."—M. M. Nice.

## BEHAVIOR

(See also Numbers 45, 49, 53, 59, 80, 85, and 90.)

**30. Social Releasers and the Experimental Method Required for their Study.** N. Tinbergen. 1948. *The Wilson Bulletin*, 60(1): 6-51. This paper re-describes the releaser concept and defends it against conflicting interpretations of social behavior which claim that animals react not to specific sign stimuli but to whole situations. Definitions and a brief review introduce the problem. A nicely selected series of field observations and laboratory experiments on birds, reptiles, fish and various invertebrates is then presented to illustrate the nature of releasers and the releasing mechanism (20 pp.). The failure of certain workers to grasp the releaser concept is attributed to lack of familiarity with pertinent literature and a failure to recognize the complex nature of the releasing mechanism. Some of the complexities which must be considered in interpreting individual responses and in planning meaningful experiments may be summarized as follows: (1) An adequate internal motivation is essential for a response; the level of this motivation varies. (2) The release of a response may depend on the combined effects of a considerable number of heterogeneous stimuli. (3) What appear to be simple reactions may, upon careful analysis, prove to be a reaction chain consisting of a series of reactions each with its own releasing mechanism. (4) What appear to be simple sign stimuli may be found to have several aspects such as size, form, color or motion, each having special significance as a releaser. (5) Conditioned responses are often difficult to distinguish from the innate responses with which the releaser concept is exclusively concerned. (6) Many reactions depend on the repetition of a stimulus, the amount of repetition necessary varying with the individual and the situation. (7) The response to sign stimuli may be general internal reactions rather than simple motor responses. (8) Some releasers induce a generalized response, in others the response has directive aspects. The experience of the author has shown that the choice type of experiment has limited applicability in the demonstration and analysis of releasers. In complex situations experiments must be planned so that experimental animals differ from control animals with respect to one feature only.—John T. Emlen, Jr.

**31. The Releaser System, a Fundamental Concept in Modern Instinct Analysis.** (Det utlösande schemat, ett grundbegrepp inom modern instinkt-analys.) Lars v. Haartman. 1947. *Ylipainos Filosofisen Yhdistyksen vuosi kirjasto Ajatus*, 14: 7-37. This is an excellent review of the releaser concept of animal behavior, much of the material being drawn from the publications of Lorenz, Tinbergen, and others. Also, however, there are presented the results of a series of experiments by the author on elicitation of "fighting reaction" in Black and White Flycatchers, *Muscicapa striata* Linnaeus, by use of models with various degrees of resemblances to birds. Individual flycatchers displayed astonishing differences in their reactions to strange birds as well as to more or less "unbirdlike" models which were placed near the nest. Although this type of experiment produces variable results, it can provide the basis for discovering the precise nature of the stimulus in releaser reactions.—D. S. F

**32. Habits of Male Hummingbirds near their Nests.** Robert T. Moore. 1947. *The Wilson Bulletin*, 59(1): 21-25. The generally accepted concept that male Hummingbirds take no part in nesting activities is challenged as a result of observations made on several species in Ecuador in 1927. Among approximately fifty nests observed, males were encountered at or near the nest sites in five instances. In three cases (three different species) male members of a pair attacked the observer near the nesting tree. In one instance a bird collected in the act of nest building was sexed as a male. At one nest closely watched for six days, the male remained on guard near the nest while the female incubated. At another, a

male started to incubate after the female had been shot from the nest. Pitelka's paper on territoriality and related behavior in Hummingbirds (*Condor*, 44(5): 189-204) is not mentioned in the bibliography of nine titles.—John T. Emlen, Jr.,

**33. Courtship Behavior of the Black Duck.** Milton B. Trautman. 1947. *The Wilson Bulletin*, 59(1): 26-35. As in his earlier papers Mr. Trautman here displays an unusual keenness in observing and analyzing bird behavior. Despite the slightness of sexual dimorphism in this species, *Anas fulvigula rubripes* Brewster, sex and age classes were found to be recognizable in the field on the basis of bill coloration, leg coloration, shape and size of head and neck, actions and voice. Autumn courtship was a relatively quiet performance which consisted of head bobbing, short chases over the surface of the water, and occasionally long chases which led to copulation. Displays were often repeated between the same individuals, and pairing bonds were apparently formed in many instances; twice the courting partner of a shot bird refused to flush when the flock took off. Winter courtship was observed on small open patches of water. It consisted of general splashing and milling about with little evidence of pairing relationships. Spring courtship was again an individual affair, like the fall performance but noisier and leading to flights in which the male followed the female in close pursuit. After a chase of from five to twenty-five minutes during which the males seemingly attempted to force the female down, she would alight on the water and half submerge as the male swam over her and copulated. Courtship flights continued into the incubation period, these later flights occurring primarily over land, often by the female alone. Males left the nesting areas when incubation was far advanced.—John T. Emlen, Jr.

**34. Wing-flashing in the Mockingbird.** George M. Sutton. 1946. *The Wilson Bulletin*, 58(4): 206-209. On the basis of observations and published notes on adult and immature mockingbirds, *Mimus polyglottos* Linnaeus, in Florida and elsewhere, Mr. Sutton concludes that the characteristic wing-flashing behavior of the species is an "instinctive gesture indicating wariness, suspicion and distrust,—occasionally, but more or less accidentally associated with the capture of food." The observations are carefully selected, nicely described and thought provoking; the interpretation suggested is interesting though it may not be entirely satisfying to all readers.—John T. Emlen, Jr.

**35. The Mockingbird's Wing-flashing.** Francis H. Allen. 1947. *The Wilson Bulletin*, 59(2): 71-73. The author of this short paper questions Sutton's interpretation of wing-flashing in the Mockingbird as a nervous gesture indicating wariness, suspicion and distrust (*Wilson Bulletin*, 58: 206-209) and suggests that exposure of the white patches may serve to illuminate dark crevices where food might be found as well as to startle the more active prey into betraying themselves by motion.—J. T. Emlen, Jr.

**36. Observations on the Behavior and Especially, the Breeding Biology of the City Blackbird.** (Beobachtungen über das Verhalten und insbesondere über die Brutbiologie von Stadtamseln.) Georg Steinbacher. 1941. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 17(5): 153-161. Recently, a number of birds that were known to earlier ornithologists only as shy woods dwellers have moved into towns and villages; here they nest in large numbers, due to the lack of natural enemies, to the absence of other species that formerly competed with them for space and food, and to the favorable feeding conditions, such as lawns and winter feeding shelves. Greenfinches, *Chloris chloris chloris* (Linnaeus), start to nest in the Berlin Zoo two weeks earlier than the birds in the country, due to the warmer temperature in the city, and their nests are so near together that they no longer defend territorial boundaries. The Blackbird, *Turdus merula* Linnaeus, has come into the cities partly in response to the angleworms in the lawns; 20 pairs nest on

the 7.6 hectares of the Frankfurter Zoo. The males sing much less than those in the wild and territory defense has become weak.—M. M. Nice.

**37. Observations on the Behavior of the Long-tailed Manakin during the Breeding Season.** (Observaciones sobre el Comportamiento de *Chirozippa linearis* durante su Propagacion.) Helmuth Wagner. 1945. *Anales del Instituto de Biología*, 16(2): 539-546. México. Description and sketches of the nest and courtship dance; the males gather in a lek and call; females make their nests, then go to the lek and call; males then perform a remarkable display flight before and around the female.—M. M. Nice.

**38. Notes on the Song of the Grasshopper Warbler.** (Kleine Studie zum Gesang des Heuschreckenschwirls.) Gerhard Warnke. 1943. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 19(3): 65-68. A male *Locustella naevia naevia* (Boddaert) in Russia sang from 10 P.M. to about 2:30 A.M.; songs lasted from one to 84 seconds, pauses from two to 22 seconds. In the three hours between 11 and 2 one June night the following number of minutes were devoted to song: 57.1, 59, 57.6.—M. M. Nice.

**39. A Note on Sun-bathing in Birds.** Noble Rollin. 1948. *British Birds*, 41(10): 304-305. Six photographs of sun-bathing birds, some in extreme postures, others not. In the former case, all in passerines, the birds seemed to try "to allow the rays of the sun to reach the base of the feathers." Gulls "were never seen to go into sun-bathing postures, though they sunned themselves," and the same was true of Shorebirds. "Living normally unshielded from the sun, it is perhaps natural that gulls and waders should be less susceptible to the sun-bathing urge."—M. M. Nice

**40. Anting in some Birds.** (La Mirmecosimpatia in alcuni Uccelli.) Ed. Moltoni. 1948. *Rivista Italiana di Ornitologia*, 18 Ser. II: 141-144. A hand-raised Mistle Thrush, *Turdus viscivorus* Linnaeus, was seen standing in the garden allowing ants to run up its legs and over its body, opening and closing its bill as if the ants gave it a pleasant sensation. After five minutes it started to preen its wings, shook the ants from its body and flew away.—M. M. Nice.

**41. Tradition in Bird Life.** L. L. Snyder. 1948. *The Canadian Field-Naturalist*, 62(2): 75-77. Cites the abundance of evidence in bird-banding literature that individuals of many bird species return to nest in the same locality in successive years and the increasing evidence that young birds, at least of certain species, may return to nest near the site of their nativity or to a place to which they were conditioned as juveniles. This continued magnetism of a given locality for the individual bird, the author calls 'tradition of occupancy.' A practical application of this knowledge is suggested in the possibility of artificially establishing the 'tradition of occupancy' in waterfowl. As an example of the feasibility of this, it is pointed out that in 1931, a "flock of mongrel black ducks" was introduced and subsequently cultivated in certain erstwhile duckless marshes in the Toronto suburbs. As a result "hundreds of feral black ducks and numbers of mallards (four to one) now winter in the Toronto region and many of them now nest in summer." Allowing for the fact that much of the vast pre-Cambrian shield is not ecologically suited to supporting large duck populations, the suggestion is made that there, nevertheless, may be innumerable scattered areas, now barren of ducks, or almost so, that do possess food resources adequate for considerable duck populations. If artificially-incubated, hand-reared ducklings of the Black Duck, were released and conditioned to these apparently suitable areas, the author sees reason to believe that they might return as breeders and that a few years cultivation might duplicate the Toronto experience.—W. Earl Godfrey.

**42. Woodcock Carrying Young.** J. S. Wightman. 1948. *British Birds*, 41(4): 124-125. The author frightened a young *Scolopax rusticola* Linnaeus "which flew a distance of about ten yards; this was followed by a second young bird which flew about 20 yards. The adult bird . . . then followed and picked up the first young one, holding it against its breast with its bill and supporting it from beneath with its feet, and flew to a point beyond the second young bird."—M. M. Nice

**43. Some Notes on the Crested Lark.** J. H. Barrett, P. J. Conder, and A. J. B. Thompson. 1948. *British Birds*, 41(6): 162-166. Observations on the calls, song and imitations of *Galerida cristata cristata* (Linnaeus) in Germany, as well as courtship display and what might be a "ritual of nest-site selection. The male walks into low scrub, calling vigorously. He stops and slowly crouches and then, with tail spread and depressed, bows several times towards the female, who . . . may crouch and pick up a piece of grass, only to drop it." "A very common threat attitude was a crouched position with wings half spread and head thrust forward. The threatened bird frequently depresses its crest."—M. M. Nice

### LIFE HISTORY

(See also Numbers 5, 32, 36, 80, and 90.)

**44. Slavonian Grebe Rearing Two Broods.** Cecilia Knowles. 1948. *British Birds*, 41(2): 56. On August 12, 1947, an adult Horned Grebe, *Podiceps auritus* Linnaeus, was seen "with one full-grown juvenile and two, approximately ten-day old chicks . . . Only one pair nested in this particular reed-bed, and on this loch I have observed that invariably each pair takes and retains a territory containing a suitable nesting site and defends it fiercely against intrusion."—M. M. Nice

**45. Behavior and Food Habits of Sennett's White-tailed Hawk in Texas.** James O. Stevenson and Logan H. Meitzen. 1946. *The Wilson Bulletin*, 58(4): 198-205. The White-tailed Hawk, *Buteo albicaudatus hypospodius* Gurney, is a rather common permanent resident on the prairies of coastal Texas where the authors have made observations on distribution, numbers, nests, food habits and general behavior. Eight nests studied on the Aransas National Wildlife Refuge were located in the tops of blackjack or live oaks eight or twelve feet above the ground. Nesting started in January or February. Two or three eggs were laid in March or early April. Nesting mortality was high in the nests studied, two predators, the Great-tailed Grackle, *Cassidix mexicanus* (Gmelin), and the Caracara, *Polyborus cheriway* (Jacquin) being involved. Of special interest is the habit of congregating at prairie fires in search of food. At one fire, 150 acres in extent, 20 White-tails and 16 other hawks congregated from an estimated distance of ten miles to course back and forth along the fire line in search of cotton rats, pocket mice and grasshoppers dislodged by the fire.—J. T. Emlen, Jr.

**46. A Nesting of the Plumbeous Kite in Ecuador.** Alexander F. Skutch. 1947. *The Condor*, 49(1): 25-31. A nest of the Plumbeous Kite, *Ictinia plumbea* (Gmelin), containing one nestling was closely watched for about one month in the eastern foothills of the Andes in Ecuador. Both parents shared in the feeding, the food, apparently, consisting of insects exclusively. During six consecutive days of intensive watching the number of feedings ranged from 0.7 to 5.0 per hour and ranged as high as 12 times in a single hour. Feeding activity was highest when flying conditions (air currents) were good.—John T. Emlen, Jr.

**47. The Life History of the Laysan Rail.** Paul H. Baldwin. 1947. *The Condor*, 49(1): 14-21. The Laysan Rail, *Porzana palmeri* Frohawk, is believed

extinct since 1944. It was formerly common on Laysan (estimated 2000 birds in 1912) and became established on several other islands following artificial introductions. All available information on its life history is here assembled—from published and unpublished sources. The bird, like certain other insular forms of rails, was flightless; it was described as active, aggressive, inquisitive and tame. Insects and other invertebrates formed the principal food items, but sea bird eggs and carrion were taken extensively in season. Two or three eggs were laid in hollowed out nests in clumps of vegetation. The downy young appeared between March and June.—John T. Emlen, Jr.

**48. On the Habits of Ptarmigans in Siberia.** (Ueber die Lebensweise des Moorschneehuhns (*Lagopus lagopus*) in Siberien.) Hermann Grote. 1941. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 17(1): 12-25. A review of recent Russian papers. Ptarmigans are an important food source in Siberia, sold in the cities in large numbers and canned in factories; in some regions they have been extirpated. In all four races discussed, the females molt quickly into brown plumage in spring, but the males molt slowly; they are still largely white as they watch over their incubating mates; they often fall victims to boys with slings and to birds of prey. *Lagopus lagopus koreni* Thayer and Bangs inhabits the whole Asiatic tundra region and the northern part of the taiga; for the most part they migrate from the coldest parts of their range in winter. *Lagopus lagopus birulai* Serebrowsky nests on the New Siberian Islands and the adjoining mainland; they migrate to and from the islands while the Arctic Sea is still frozen. In winter they associate with the reindeer that dig down through the snow to the "moss" and incidentally uncover seeds and plants on which the birds feed. *Lagopus lagopus maior* Lorenz inhabits the steppes of southwest Siberia. Nineteen nests held 211 eggs of which 173 hatched, or 82 percent, while in the same region this was true of only 58.5 percent of eggs in nests of the Black Grouse, *Lyrurus tetrix* (Linnaeus). When a guarding male was shot, a neighbor male took charge of watching the "widow's" nest as well as of his own. *Lagopus lagopus brevirostris* Hesse lives in the Altai and Sajon mountains at elevations between 1800 and 2800 meters; nesting is late and both parents care for the young and defend them courageously. Notes are given on the food of the four races.—M. M. Nice

**49. Observations on the Stock Dove in the Rominter Heide.** (Beobachtungen über die Hohltaube in der Rominter Heide.) Otto Steinfatt. 1941. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 17(2): 58-63; (3) 90-96. *Columba oenas* Linnaeus is dependent in East Prussia on holes of the Black Woodpecker. *Dryocopus martius martius* Linnaeus; about a hundred pairs nested on the 25 hectares of the Rominter Heide, largely in light pine woods. The courtship of the male is not related to the presence of a territory or of a hole, since it is the female that chooses the nest site. The male coos zealously and performs courtship flights. After the pair has been formed, the female searches for a hole; her mate accompanies and watches her, stimulating her to renewed efforts by a pretence of pecking at her. When she has found a suitable hole, the male enters and gives the nest-call. One nest was watched all day on the 13th day of incubation; the female incubated until relieved by her mate at 10:00 A.M.; she returned at 4:45 P.M. Four days later the male came at 9:23, his mate at 4:10, so on both days the female incubated 17¼ hours out of the 24, the male 6¼. Incubation lasted 19 days. When one young was one day old, the male relieved his mate at 9:05, and she returned at 3:15. Young Stock Doves begin to coo when eight to nine weeks old and at 11 weeks begin the juvenal molt. Two to three broods are raised.—M. M. Nice

**50. Observations on the Lucifer Hummingbird.** (Observaciones sobre la Vida de *Calothorax lucifer*.) Helmuth O. Wagner. 1946. *Anales del Instituto de Biología*, 16 (1/2): 283-299. México, D. F. A very interesting paper. This

Hummingbird, *Calothorax lucifer* (Swainson), is common in the arid country in southern Mexico; males and females arrive in April and each bird stakes out a territory, each male defending his from other males, each female hers from other females. She builds an elaborate nest, construction taking about two weeks; only then does she seek a male. Remarkable courtship flights are illustrated by the author, as well as "play flights" outside the breeding season. Incubation lasts 15 to 16 days; fledging 20-24 days. During sunny days feeding occurs mostly in the early morning and late afternoon, the rest of the time the female shading the young, but on cloudy days feeding is distributed throughout the day. During rainy periods the nest may become watersoaked or the young may perish from hunger because the female has to spend so much time protecting them from the weather. A careful study was made of the course of the molt, illustrated with figures. Young males do not attain adult plumage until the second spring.  
—M. M. Nice

**51. Swift Observations in 1943.** (Mauersegler-Beobachtung 1943.) Doehler. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 20: 102-103. In 1943 a female Swift, *Apus apus* (Linnaeus) returned for the fourth season to nest in a Starling box; at the end of May she was found there with two eggs and two males, her mates of 1940-41 and of 1942. Four days later the nest was gone and also the second male; the author provided a new nest and the female laid two more eggs, but none of them hatched. In another nest incubation lasted 20 days, fledging 42 days.—M. M. Nice

**52. Observations on the Wryneck.** (Beobachtungen über das Leben des Wendehalses *Jynx t. torquilla*) Otto Steinfatt. 1941. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 17: 185-200. The Wryneck differs in many respects from the true woodpeckers: instead of having conspicuous plumage, it is protectively colored; instead of being a permanent resident, it spends only 3½-4 months in its summer home in Europe, the rest of the year in Africa; in contrast to the 3-6 eggs of native woodpeckers, it lays 8-11; it does not excavate a hole, but uses ready-made ones; it lives in open parklike country where it can find its favorite food, ants; and the female incubates and broods at night. The birds migrate singly and at night. From their arrival till the eggs are laid, Wrynecks are very noisy. Male and female incubate in long periods, sometimes over three hours; the eggs hatch in 13 days. Incredible numbers of ant "eggs" are consumed by a brood, perhaps from 8,000 to 12,000 a day. Three all day observations were made: at one nest, the eight young were fed 112 times when 10 and 11 days old, 122 times when 12 and 13 days old, and 181 times when 18 and 19 days old. The female brought twice as many meals as the male, (the female was marked with green paint on the tail, administered as she incubated,) and also carried off excreta much oftener. The young left at 22 to 23 days of age and 10 to 14 days later were independent. There are a great many notes on the development of the young, the vocal utterances of adults and young, and a discussion of increase and mortality, the author believing that, as he found with Titmice, migratory species undergo greater losses than do resident ones. An excellent study.—M. M. Nice

**53. Some Notes on the Nesting Habits of the Pratincole.** G. K. Yeates. 1948. *British Birds*, 41(10): 301-303. A dozen pairs of *Glareola pratincola pratincola* (Linnaeus) were watched in the Camargue in May 1937 and at the same locality in May, 1947; six photographs are shown. Three eggs are laid. "Pratincoles are temperamental birds—in the air noisy and dynamic; on the ground very silent and sleepy. They will stand for hours doing nothing, and only at the time of nest-relief have I ever heard a bird on the ground utter a note." In the air they dash at great speed in wide circles, and they mob Marsh-Harriers, *Circus aeruginosus aeruginosus* (Linnaeus), and Black Kites, *Milvus migrans migrans* (Boddaert), that pass by. During incubation "at times the whole colony, both sitting

birds and those standing about 'on guard,' will take to the air and after screaming round the territory vanish." They may remain away for six hours. The author found the birds had gone to two "assembly grounds," one a quarter mile away, the other three-quarters; here they stood about doing nothing, but perhaps had been feeding on a plentiful supply of grasshoppers nearby. An elaborate ceremony in which the male brings food to his mate precedes coition, and another ceremony occurs at nest relief.—M. M. Nice

**54. At the Nest of the Great Grey Shrike in the Rominter Heide.** (Am Nest des Raubwürgers in der Rominter Heide.) Otto Steinfatt. 1941. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 17: 161-164. Only one nest of *Lanius excubitor excubitor* Linnaeus was found by the author in seven years of field work in East Prussia; two all day observations were made; when the five young were approximately five and six days old the parents fed them 144 times; six days later they fed them 93 times.—M. M. Nice.

**55. Winter Feeding Hours of Robins, Blackbirds and Blue Tits.** John Lees. 1948. *British Birds*, 41(3): 71-76. Charts and tables showing the number of *Erithacus rubecula melophilus* Hartert, *Turdus merula merula* Linnaeus and *Parus caeruleus obscurus* Pražák caught in automatic traps for each hour of day. "The Robin has its maxima well separated. The less active period over mid-day extends to about five hours. The Blackbird has maxima close together, 1½ hours on each side of mid-day. The Blue Tit's maxima are between those of the other two species."—M. M. Nice.

**56. On Nestling Period and Family Break-up in the Stonechat.** (Ueber Nestlingsdauer und Familienauflösung beim Schwarzkehlchen.) Fritz Freiling. 1942. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 18(1): 10-12. The nestling period of *Saxicola torquata rubicola* (Linnaeus) lasted 14 to 15½ days and families stayed together until the young were 42 to 54 days old.—M. M. Nice.

**57. Further Observations on the Stonechat.** (Weitere Beobachtungen am Schwarzkehlchen.) Fritz Freiling. 1943. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 18(6): 133-137. Two males, banded in the nest, returned to breed in the vicinity, one settling two kilometers from his birthplace. The nest is built by the female, and incubation is performed by her alone; and it lasts about 14½ days.—M. M. Nice.

**58. Further Notes on Clutch and Brood Size in the Robin.** David Lack. 1948. *British Birds*, 41(4): 98-104, (5): 130-137. A fine paper based on a vast amount of information on *Erithacus rubecula* (Linnaeus). The average clutch size in 1,498 nests in England and Wales was 4.6 in March, 5.0 in April, 5.2 in May, 4.8 in June. There are annual differences in clutch size which are hard to explain: the average size of all clutches in England and Wales from May 6-19 before 1945 was 5.1, in 1946 6.3. Hatching success is estimated only from those nests found before the set was complete; of 1,426 eggs laid, 1,011 or 71 percent hatched. Nesting success is estimated only from those nests found before the young hatched; of 1,865 that hatched, 1,427 were fledged — 77 percent. The average success from egg to leaving nest was 55 percent. As to seasonal success from egg to leaving nest, this was 53 percent in March and April, 61 percent in May, 46 percent in June and July. Nesting success was approximately the same for clutches and broods of different sizes. Both incubation and nestling period average 13-14 days.—M. M. Nice.

**59. On the Life of the Lapland Longspur on the Tundra.** (Ueber das Leben der Spornammer (*Calcarius lapponicus*) in der Tundra.) Hermann Grote. 1943. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 19(4/5): 98-104. A review

of 15 Russian articles. The Lapland Longspur is the common song bird of the tundra, both on mossy and stony ground. They arrive before the snow has melted, the males a few days earlier than the females; all are very fat, but they become thin during the breeding season. Until the snow melts the birds remain in flocks. Farthest north they arrive paired on their nesting grounds. The males fight bitterly in defense of their territories and sing tirelessly, both in the air and on the ground. The well hidden and feather-lined nest is built by the female; in especially favorable places there may be 1,000 nests to the square kilometer. Four to six eggs are laid; many are destroyed by floods or new snow. The females incubates closely, while her mate stays nearby and tries to lure off enemies with injury-feigning. Both parents feed the young for 20 to 22 hours a day; the latter leave the nest when eight to ten days old. At this time they are very vulnerable to the attacks of the Jaegers, *Stercorarius longicaudus* Vieillot and *Stercorarius parasiticus* (Linnaeus). At the end of July old and young start to molt, and after that the birds migrate, the adult males first of all.—M. M. Nice.

**60. A Life History Study of the Indigo Bunting.** Hazel I. Bradley. 1948. *Jack-Pine Warbler*, 26(3): 103-113. In five nests of *Passerina cyanea* (Linnaeus) at Douglas Lake, Michigan, the females built, incubated and fed the young, the males singing and aiding in defense. One female showed injury feigning after the young had left. One nest with three young eight days old was watched all day; the female brought 119 meals in 16 hours. Of 18 eggs laid, 15 hatched and ten were fledged, 55.6 percent success. The young leave the nest at the age of eight or nine days.—M. M. Nice.

**61. Observations at a Nest of the Serin and the Short-toed Tree Creeper during the Campaign in France in 1940.** (Nestbeobachtungen beim Girlitz (*Serinus canaria serinus* (L.)) und beim Gartenbaumläufer (*Certhia brachydactyla megarhynchos* (Brehm)) während des Frankreichfeldzuges 1940.) Otto Steinfatt. 1942. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 18(1): 21-26. The contrast between birds feeding seeds by regurgitation and insects a few at a time is shown by four hours observation at the nest of a Serin with two young perhaps 12 days old and four hours at a Tree Creeper's nest with four or five young the day before they left the nest, i.e., about 15 days old; the Serins brought four meals, the Creepers 95. The Serins were watched on June 30; the fledged young of the first brood often begged from their parents and sometimes were fed; the imminence of a third brood was shown by courtship flights of the male parent and three copulations. Dr. Steinfatt found small passerines abundant in the hedges, gardens and parks of France, but birds of prey were very uncommon.—M. M. Nice.

## CENSUSES AND POPULATIONS

(See also Number 59.)

**62. The Ten-Year Cycle.** William Rowan. Undated, Presumably 1948. Department of Extension, University of Alberta, Edmonton, Alberta. 12 pp. This pamphlet sketches the population status of the well-known cyclic species in simple readable brevity without speculating on theories or presenting field data. Broadly speaking, the statements concerning the animals involved are valid and based on previous research by various authors. A few statements are made which would be more valuable to the researcher if evidence and more detail were presented. For example, what criteria were used to age the 200 Hungarian Partridges that showed 70 percent adults, and how much evidence was obtained from the questionnaire to country points showing "that the rearing season was accompanied by a heavy rate of juvenile mortality"? The most important message from this publication is in calling attention to the paucity of knowledge treating of wildlife cycles. "To the fur trade the cycle has been familiar for

nearly 250 years" yet practically nothing more than the phenology of cycles pertaining to certain species is known today. Apparently cyclic phenomena have "buffaloed" biologists into more lucrative studies that pay dividends over shorter periods of time but which in no manner offer a challenge to science approaching that of wildlife cycles. It is high time for someone to plan a long-range study involving "foresight" and not depending on "hindsight" for cyclic data.  
—Irven O. Buss

**63. The Catastrophic Decrease in the Population of the Razor-billed Auk in Finland.** (Tordmulekatastrofen och populationens decimering i Finland.) Lars von Haartman, 1947. *Dansk Ornithologisk Forenings Tidsskrift*, 41(3): 168-170. The precipitous decrease in populations of *Alca torda* Linnaeus noted at the beginning of the present decade in Denmark and Sweden also occurred in Finland. The author's data show that several of the colonies were reduced to a fraction of their previous size. It is suggested that the freezing of the Baltic Sea was the cause of the decline.—D. S. F.

**64. The Gull Colonies of Hirsholmene.** (Maagekoloniere paa Hirsholmene.) Finn Salomonsen. 1947. *Dansk Ornithologisk Forenings Tidsskrift*, 41(3): 174-186. This paper is actually the presentation of a census of breeding birds on the eight islands during early June 1947 as well as an interesting discussion of the structure of gull colonies. In numbers of breeding pairs (or nests) the most common species were the Black-headed Gull, *Larus ridibundus* Linnaeus, 5,937; Common Gull, *Larus canus* Linnaeus, 2,918; Sandwich Tern, *Sterna sandwicensis* Latham, 1,821; Kittiwake, *Rissa tridactyla* (Linnaeus), 139; and the Herring Gull, *Larus argentatus* Pontoppidan, 79. The total number of breeding pairs recorded was 11,017. The distribution of the nests of the various species of Laridae in the colonies on these islands is in accordance with a definite pattern. The nucleus consists of the nests of the Black-headed Gull which is the first to arrive in spring. The nests of the Common Gull are scattered throughout the islands, but are more numerous in association with the colonies of Black-headed Gulls where they occupy peripheral positions. Herring Gulls are not allowed to breed in close association with the colony, although, some nests are placed among the more scattered Common Gull nests at the periphery of the colony. The Sandwich Terns arrive late and force themselves into the center of the Black-headed Gull colony where they destroy eggs and drive other birds away, the result being that the center of the colony becomes a dense breeding area of Sandwich Terns. The lines of demarcation of the three species in the colony are sharp.—D. S. F.

**65. The Stork in Southwest Jutland 1940-1947.** (Storken (*Ciconia ciconia* (L.)) i Sydvest-Jylland 1940-1947.) Halfdan Lange. 1948. *Dansk Ornithologisk Forenings Tidsskrift*, 42(1): 4-10. Since 1940 nests have decreased 56 percent so that the population is now about the same as it was in 1928. There is a close correlation in fluctuations of Danish and German Storks but not with Dutch Storks; presumably the last have different wintering areas.—D. S. F.

**66. Storks in Switzerland. Statistics for 1947.** (Die Storche in der Schweiz.) Max Bloesch. 1948. *Der Ornithologische Beobachter*, 45(1): 5-7. During 1947 there were five successful nests compared to three in 1946. Eighteen young left to make the southward migration as compared to 10 in 1946.—D. S. F.

**67. The Index of Heron Population.** W. B. Alexander. 1948. *British Birds*, 41(5): 146-148. This census of nests of *Ardea cinerea cinerea* Linnaeus in Great Britain showed a loss of 40 percent in comparison with normal years. "This exceptionally large decrease can safely be attributed to the exceptional severity of the winter 1946-47. The continuance of frost and of snowstorms from the last week of January to the middle of March throughout the country was unprecedented."—M. M. Nice.

**68. Studies on Population Density in the Breeding Territory. (The Sanctuary on the Island of Imchen near Kladow in the Breeding Seasons from 1932-1934.)** (Studien über Siedlungsdichte im Brutgebiet. (Das Naturschutzgebiet "Insel Imchen bei Kladow" im Ablauf der Brutperioden 1932-1934.)) Gottfried Schiermann. 1942. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 18(2): 62-68. On the 8,000 square meters of the island itself, five pairs of as many species of passerines nested in 1932, but after protection from visitors for a year, the number rose to nine pairs of eight species at which figure it remained the following year. The author considers this a saturation point in a favorable locality where no artificial methods of attraction, such as feeding shelves and nesting boxes, are provided. It corresponds well with the density found in two others of his studies: 888 square meters per pair on the Island Imchen; 840 per pair in a 100 year old cemetery in Berlin and 982 in a portion of the Unterspreevald.—M. M. Nice.

**69. Fluctuations in the Populations of the Galliform Species in Finland.** (Kanalintujen runsaudenvaihtelusta Suomessa.) K. Airaksinen. 1946. *Suomen Riista*, 1: 75-92. The author has used the data on the export of galliform birds since 1867 as the basis of this study. During the seventy years there have been 11-12 "climax years," 10 average years, 15 bad years, and 22 years of failure. "According to market information, the amount of game during the years of failure is only about ten percent of the amount during the climax years, but about 30 percent according to the export statistics. . . ."—D. S. F.

**70. On Breeding Success and Population Density of the Sparrow Hawk.** (Ueber das Brutvorkommen und die Siedlungsdichte des Sperbers (*Accipiter nisus nisus* L.) in der Sudlausitz.) Herbert Kramer. 1943. *Beiträge zur Fortpflanzungsbiologie der Vögel*, 19(3): 71-75. Of 334 nests found from 1916 through 1941, 265 were successful, 79 percent. Man and the Goshawk, *Accipiter gentilis* (Linnaeus), are the chief enemies. Size of the hunting territory is probably from six to eight square kilometers.—M. M. Nice

## ECOLOGY

(See also Numbers 5, 19, 23, 24, 25, 27, 36, 64, 90, and 94.)

**71. The Habits of Certain Species of Birds which Live in Association with Colonies of Insects or Other Species of Birds.** (Om vanan hos vissa fåglar att bosätta sig intill insektssainhällen eller andra fågelarter.) Sigfrid Durango. 1947. *Fauna och Flora*, 1947(5): 185-205, 1947(6): 249-259. Although this paper deals with two phenomena which appear superficially to be somewhat unrelated, it is a most interesting treatise which considers a large number of recorded observations. Associations during the breeding season with insects, many with bees or wasps, in Central America, Australia, and Africa are described briefly. The author classifies the interspecific nesting relationships, involving two or more avian species, into four categories: (1) *Two or more closely related species breeding in close proximity* primarily because of similar biotope requirements. Examples are breeding colonies containing spoonbills, ibises, herons, egrets, etc. (2) *Birds of a different species nesting in the colony of another species or sometimes in the mixed colony of several species.* The "host colonies" are usually colonies of gulls or terns whereas the associated species are such as certain species of ducks, turnstones, or grebes. (3) *Colonies of a weak species associated with a pair or pairs of a strong species, usually hawks or owls.* The association of Cliff Swallows, *Petrochelidon pyrrhonota albifrons* (Rafinesque), with series of the Duck Hawk, *Falco peregrinus* Tunstall, is cited as among the examples. Similar relationships between geese and hawks or owls are cited. (4) *Certain species which show an obvious tendency to nest together pair by pair.* Among the examples of this rela-

tionship are the Red-backed Shrike, *Lanius collurio* Linnaeus, and the Barred Warbler, *Sylvia nisoria* Bechstein; also the Raven, *Corvus corax principalis* Ridgway, and the Prairie Falcon, *Falco mexicanus* Schlegel. There is a richly documented discussion of the possible motivating factors in such associations among birds and between birds and insects.—D. S. F.

**72. The Woodcock in the British Isles.** W. B. Alexander. 1946-1948. *The Ibis*, 87: 512-550, 88: 1-24, 159-179, 271-286, 427-444, 89: 1-28. This splendid production was motivated by, and is to considerable extent based on, the replies to questionnaires of the Woodcock Inquiry of 1934-35 which was initiated by the Council of the British Trust for Ornithology. The Woodcock, *Scolopax rusticola* Linnaeus, has been recorded as breeding in all of the counties of the British Isles except Anglesey. A summary of the replies to the questionnaires shows that the most frequent types of nesting habitat are the various deciduous woods with underbrush. However, as the author indicates, this may be a reflection primarily of availability rather than preference. The normal clutch is four; three or five occur occasionally; six or two rarely. Fertility is high as indicated by the fact that 85 percent of the broods reported had three or four young. Interesting data on late summer movements are recorded. All birds banded as young or adults during the breeding season and recovered during the following autumn away from the banding locality were displaced northward. These movements are termed *premigration* which is equivalent to the German *Zwischenzug*. Banded continental birds collected (shot) on the British Isles come from Scandinavia, Russia, Latvia, Pomerania, Belgium, and Heligoland. Banded British birds have been recovered in Belgium, France and the Iberian Peninsula. "On their face value . . . figures appear to show that about three out of every four birds in northern England and southern Scotland remain in their native locality during the winter, whilst one out of every four travels to a distance. In northern Scotland, out of every three, two remain and one travels to a distance; whilst in southern England and northern Ireland about one in every ten undertakes a journey, whilst the remaining nine are resident." (p. 76.) As the author points out, these conclusions must be accepted with reservation because of possibly greater chance of recovery near the banding locality.—D. S. F.

**73. Ecological Notes on the Prey Selected by a Barn Owl.** Francis C. Evans and John T. Emlen, Jr. 1947. *The Condor*, 49(1): 3-9. Pellets collected systematically from beneath the daytime roost of a Barn Owl, *Tyto alba* (Scopoli), near Davis, California, provided material for tracing quantitative changes in the diet of this bird during thirteen consecutive months. House Mice (*Mus*) and Deer Mice (*Peromyscus*) were most heavily represented in the spring months, Gophers (*Thomomys*) and Voles (*Microtus*) in the fall and early winter. An estimated 126 pounds of food was consumed during the study period.—John T. Emlen, Jr..

**74. The Cowbirds of Preston Frith.** Russell T. Norris. 1947. *The Wilson Bulletin*, 59(2): 83-103. Nest parasitism by the Cowbird, *Molothrus ater* Boddaert, was studied on a 90-acre bird sanctuary of hardwood woodland and old fields near Butler, Pennsylvania. Among 237 nests of 14 species observed during 1944 and 1945, 73 (30.8 percent) were parasitized; 45 of these contained one cowbird egg, 21 had two and seven had three. Species inhabiting the open fields were most frequently parasitized during April and early May while woodland species bore the brunt from mid-May until mid-July. The estimated cowbird population of the area was six females in 1944 and ten in 1945. The deposition of eggs, as observed in five nests, occurred from three to 23 minutes before sunrise. Three excellent photographs show female cowbirds at the nests of Ovenbirds and Red-eyed Vireos. Cowbird eggs appeared in nests from several days before the start of laying by the host to as late as the fourth day of incubation. Eggs of the host were removed by cowbirds in eleven instances, generally when two or more eggs

were already present. The incubation period in ten eggs ranged from 11 to 13 days and averaged 11.6 (the definition of period not given); the fledging period ranged from eight to ten days and averaged 8.7. Hatching success was 42.6 percent for the cowbirds' eggs as compared with 57.3 percent for the eggs of the host species on the area. Fledging success was 63 percent for hatched cowbirds, 64 percent for hatched eggs of host species. Parasitized nests produced on the average about one less host young than non-parasitized nests; only four parasitized nests failed to produce at least one host young. Five graphs and two composite photographs compare the growth rate of cowbird nestlings and their host nest-mates.—John T. Emlen, Jr.

**75. Snake Depredations at Bird Nests.** Amelia R. Laskey. 1946. *The Wilson Bulletin*, 58(4): 217-218. In her studies of Bluebirds in Nashville, Tennessee, the author of this note on twelve occasions has caught snakes in the act of robbing nest boxes. Indirect evidence indicates that snakes are the major nest predator, locally, accounting for from 23 to 40 percent of the Bluebird nests each year. Snake predation rarely occurs in newly established nest boxes, but becomes increasingly common in two and three year old boxes; this suggests that nests once found, are visited periodically by experienced snakes.—John T. Emlen, Jr.

**76. Nesting Sites of the Parula Warbler in the Potomac Valley.** Roger T. Peterson. *The Wilson Bulletin*, 58(4): 197. The Parula Warbler, *Parula americana* (Linnaeus), provides an excellent example of a species which conforms to neither life zone nor biome in its distribution, but rather selects habitats in which a particular nesting niche, represented by the lichen (*Usnea*) in the north and the epiphyte (Spanish moss) in the south, may be found. Nests along the Potomac River near Washington, D. C. where neither of these forms occur, were located in superficially similar though basically different situations, in branches of debris caught during flood waters on low branches overhanging the river. A fine photograph of such a nest by Ralph E. Lawrence accompanies the article.—John T. Emlen, Jr.

**77. Distribution of Seeds by Birds.** W. L. McAtee. 1947. *The American Midland Naturalist*, 38(1): 214-223. Seeds may be distributed by birds by external adhesion, as food in the digestive tract, and in transport for storage. Seeds taken as a part of a fruit may have their possibilities of germination improved during the period in the digestive tract. The annotated bibliography contains 94 references pertaining to North American species only.—D. S. F

## CONSERVATION

(See Number 95.)

## AVIFAUNAL DYNAMICS

(See Numbers 23, and 29.)

## GEOGRAPHIC DISTRIBUTION AND ZOOGEOGRAPHY

(See Numbers 83, 86, and 94.)

## EVOLUTION

**78. A Preliminary Survey of Trends in Avian Evolution from Pleistocene to Recent Time.** Hildegard Howard. 1947. *The Condor*, 49(1): 10-13. There is no fossil record for birds comparable to that available for certain mammal groups such as the horse, but the large collections of Pleistocene material from western North America make it possible to trace evolutionary trends during the past 50,000 to 100,000 years. Of some one hundred and eighty-six fossil birds from the west

coast, thirty-six are probably not ancestral to any living form, while the remaining one hundred and fifty are closely related to existing species. Slight differences in size and proportions of Pleistocene and modern species of vultures, owls, grebes and coots suggest that these birds have been undergoing gradual evolutionary changes.—John T. Emlen.

**79. Did the Ancestor of the Ostrich Fly?** R. Broom. 1947. *The Ostrich*, 18(1): 47-50. This is a brief review of evidence indicating, contrary to the ideas of P. R. Lowe, that the ostrich was derived from ancestors with flight.—D. S. F.

## PARASITOLOGY AND DISEASES

(See Number 93.)

## BOOKS AND MONOGRAPHS

**80. Territory in Bird Life.** Eliot Howard. 1948. Collins, 14 St. James's Place, London. 224 pp. 10s. 6d. Biologists will welcome the appearance of this classic in the history of bird watching, first published in 1920 and long out of print. "Territory in Bird Life" has had an immense influence in ornithology; it gave a new impetus to life history studies and furnished a key to much that had been baffling in bird behavior. The new edition has an introduction by Julian Huxley and James Fisher in which a brief history of the theory of territory is presented as well as a short discussion of Howard's different books. The chapter headings are: The Disposition to Secure a Territory; The Disposition to Defend the Territory; The Relation of Song to the Territory; The Relation of the Territory to the System of Reproduction; The Warfare between Different Species and its Relation to the Territory; The Relation of the Territory to Migration. There are a list of scientific names of the birds cited and a good index as well as twelve spirited illustrations by G. E. Lodge and H. Grönvold. Drawing on his careful observation of many British birds, Howard relates in his distinguished style what the birds did and his interpretation of the underlying motivations. We owe a debt to Mrs. Howard and the publishers for the republication of this notable book.—M. M. Nice.

**81. Life Histories of North American Nuthatches, Wrens, Thrashers and their Allies.** Arthur Cleveland Bent. 1948. *United States National Museum Bulletin* 195, 475 pp. U. S. Government Printing Office, Washington 25, D. C. \$1.75. In the manner and excellent quality of the previous volumes in this important series, the author presents inventories of our present knowledge of the life histories of North American Sittidae (15 forms), Certhiidae (7), Chamaeidae (6), Cinclidae (2), Troglodytidae (55), and Mimidae (19). This thorough assemblage of life-history material reveals again the tremendous amount of investigation in North American species still remaining to be done.—D. S. F.

**82. Check-List of Birds of the World Vol. VI.** James L. Peters. 1948. Harvard University Press, Cambridge, Massachusetts. xi + 259 pp. \$6.50. The sixth volume of Peters' invaluable Check-List of Birds of the World continues the general plan followed in the first five volumes and maintains the high standard of accuracy that has made this work so reliable and useful a reference book and working tool for systematic ornithologists. The present volume includes the order Piciformes with the families Galbulidae or Jacamars, Bucconidae or Puff-birds, Capitonidae or Barbets, Indicatoridae or Honey-guides, Ramphastidae or Toucans, and Picidae or Woodpeckers. This brings the work to the end of the non-passerine groups. Aside from providing a convenient and trustworthy reference list of the genera, species, and races of birds of the above families, the present volume gives us the first complete recent revision of the classification of some of these important families. Thus, the woodpeckers had not been mono-

graphed since 1890 when Hargitt wrote the accounts of them for the 18th volume of the Catalogue of Birds in the British Museum. The great increase in knowledge of these birds amassed during the past 60 years and the changing point of view as to their proper classification are now brought together and made readily available to students. As in the previous volumes of the series, synonyms since Sharpe's Hand-list, published in 1900, are given, making the book a complete coverage of the literature of the Piciformes as well as a record of their included forms and their respective ranges.—Herbert Friedmann.

**83. A Review of the Bird Fauna of British Columbia.** J. A. Munro and I. McT. Cowan. 1947. British Columbia Provincial Museum, Special Publication, No. 2. 285 pp., 42 figs. in text. Supplanting the list of the birds of British Columbia by Brooks and Swarth (*Pacific Coast Avifauna*, No. 17), this new compilation lists 491 species and subspecies of birds known to have occurred in that Province. An additional 14 species are contained in the hypothetical list. Vernacular names are applied to the species as a unit, subspecies being listed by scientific name only. A statement of general status for the species or subspecies is followed by definite date and locality records selected to illustrate seasonal and geographical distribution, and, where counts or estimates are available, numerical status quo. Migration and nesting data are arranged to indicate seasonal duration of these phenomena. The introduction contains excellent descriptions, with map (fig. 1), of the 13 biotic areas recognized in the Province by the authors and also an account of the considerable environmental modifications that have occurred particularly in the more settled areas. A useful bibliography of British Columbia birds comprises 650 titles.—W. Earl Godfrey.

**84. Digestion.** Edited by H. J. Vonk, J. J. Mansour-Bek, and E. J. Slijper. 1946. *Tabulae Biologicae*, 21(1): 284 pp. Uitgeverij Dr. W. Junk, Amsterdam. This volume is completely devoted to comparative physiology of digestion with appropriate attention to birds wherever there is available information.—D. S. F.

**85. Hormones and Behavior.** Frank Beach. 1948. Paul B. Hoeber, Inc. 49 East 33rd Street, New York, New York. xiv + 368 pp. This assemblage of the vast amount of literature in the field of the endocrinology of behavior represents a prodigious task of many years. The breadth of the encompassed field is "great including such varied aspects as "Courtship and Mating", "Migration," "Oviposition, Parturition, and Parental Behavior", "Emotion", "Conditioning and other Types of Learning", "Morphologic Structures Employed in Specific Behavior Patterns" and "Homeostasis, Metabolism, Metamorphosis, and Moulting." In view of the fact that the book deals with all groups of vertebrates and, to a certain extent, also with invertebrates, the treatment of the material related to birds is adequate although necessarily non-critical. The section on hormones in relation to migration is a competent discussion and an indicator of how poorly the endocrinology of bird migration is understood. It is unfortunate that space did not permit reference to, and a discussion of, the experiments of Benoit dealing with the mechanism of pituitary stimulation by light since this is an interesting and important field. In the otherwise good and valuable bibliography of 64 pages there are numerous errors, mostly typographic. The index of 11 pages does not include the authors cited. The above-mentioned shortcomings are really minor in consideration of the true value of the book. Its usefulness as a basic source of information in one of the most fascinating fields of modern experimental biology is obvious.—D. S. F.

**86. Lincoln County Birds (Nebraska).** Wilson Tout. 1947. Published by the author at North Platte, Nebraska. v + 191 pp. 1 pl., 2 maps. The remark is made in the preface that "the book is not a scientific publication in the generally accepted meaning of the term." Nevertheless this popular account of bird notes

accumulated over a period of forty years will be of considerable interest and value to bird students of Nebraska and surrounding areas. 263 species are listed.  
—George E. Hudson.

**87. Field Records for Northwestern Birds.** Ernest S. Booth. 1947. 36 pp. Published by the author, Walla Walla College, College Place, Washington. Cloth, \$1.50; paper \$0.50. This is a companion record for the author's *Birds of the West*. As such, it contains a list of species and subspecies, without scientific names, for Oregon, Washington, Idaho and western Montana. For each species there are spaces for a "place, date first seen," "place, date next seen," "Became common," "Status (permanent resident, summer resident, winter resident, etc.)," "Nest—place, date, number eggs, remarks." Although obviously designed primarily for beginners and individuals with no taxonomic experience, the list contains subspecies which cannot be identified with certainty in the field; this can only lead to improper identifications. In general, the list would be more useful were subspecies not included. Similar lists (not seen) are available for "Southwestern Birds" and "Rocky Mountains" (same prices).—D. S. F.

**88. Bird Haunts in Southern England.** G. K. Yeates. 1947. Faber and Faber, 24 Russel Square, London, W.C. 1. 112 pp. 15s. Ninety-nine fine photographs of English birds. Mr. Yeates tells in pleasant fashion of his experiences in taking these pictures of many different species. Particularly interesting are the descriptions of the Bittern, *Botaurus stellaris stellaris* (Linnaeus), with its example of courtship feeding; of the eerie evening calls of the Stone Curlew, *Burhinus oedicnemus oedicnemus* (Linnaeus); of the pretty song and display of the Wood Lark, *Lullula arborea arborea* (Linnaeus); of the rich song of the Nightingale, *Luscinia megarhyncha megarhyncha* Brehm; and of the breath-taking passes of the Hobby, *Falco subbuteo subbuteo* Linnaeus. It is shocking to learn that in this day, egg collectors are still active persecutors of the rare Crossbill, *Loxia curvirostra* Linnaeus, and the splendid little Hobby.—M. M. Nice.

**89. British Sea Birds.** C. A. Gibson-Hill. 1947. H. F. & G. Witherby, 5 Warwick Court, London, W. C. 1. 144 pp. 18s. This book is a most attractive combination of clear concise text, 39 useful sketches, and 83 amazingly exquisite photographs. Twenty-four species are considered with reference, in each case, to description of all ages, distribution, behavior, nesting habits, food habits, swimming and diving habits, enemies, etc. There are many interesting notes in the use and etymologies of common names. The text is relatively brief, but shows laudable judgment in selection of material. Although prepared for the layman, most ornithologists will find it useful and informative. The final chapter, "Field Characteristics and Distribution," is ample evidence of the author's skill as a field ornithologist. A series of 17 maps give the breeding distribution of the species in Britain. It should be pointed out that 20 of the species included in this book occur, or have been reported, on the American side of the Atlantic. Because of this and because of its truly superb illustrations, American ornithologists should find this book to be a most welcome edition to their libraries.—D. S. F.

**90. Haunts of British Divers.** Niall Rankin. 1947. Collins, 14 St. James's Place, London. 96 pp. 12s., 6d. Even the most casual examination of this book could not fail to produce a profound impression of excellence of choice and taste in illustration. The 82 photographs by the author, as well as the frontispiece in color and the 11 ink drawings by Margaret Myddelton, far surpass the descriptive potential of any review. Although the illustrations in reality eclipse the text of the book, the latter has commendable merit in itself. There is much of interest concerning ecology, life history, courtship, and feeding habits of the Great Crested Grebe, *Podiceps cristatus* (Linnaeus); the Black-throated Diver, *Colymbus arcticus* Linnaeus; and the Great Northern Diver, *Colymbus immer* Brünnich.

Written, at least to a great degree, for the lay reader, this book is likewise an important contribution to recorded ornithologic knowledge.—D. S. F.

**91. British Birds' Eggs and Nests.** Eric Pochin, with drawings by John Read. 1947(?). Brockhampton Press Ltd., Leicester, England. 32 pp. This attractive little book describes the nests and eggs of 149 British species. The arrangement is according to habitats. The most important feature is that each egg is illustrated in actual size and color, the illustration appearing beside the description of the nest. The author and the publisher are alike to be praised for the originality of organization and the general excellence of this little manual. It is a worthy member of "The Young Naturalist Series."—D. S. F.

**92. British Birds.** Wilfred Willett. Illustrated by Roland Green. 1946-1947. Foy Publications Ltd., 23, Wilson Street, London, E.C. 2. 12 parts of 20 pp. each. Three shillings each. These attractive booklets, bound in stiff paper and most attractively illustrated, represent an important device in popular education in ornithology. The text material is carefully prepared and interestingly presented; it contains many interesting facts and concepts. Each part contains four color plates, in addition to other illustrations. A similar series on American birds should have real value as propaganda for bird protection.—D. S. F.

**93. Diseases of Poultry.** Edited by H. E. Biester and L. H. Schwarte. 1948. The Iowa State College Press, Ames, Iowa. xiii + 1154. \$9.50. Thirty-four authorities have contributed chapters to this important treatise which is far more than a simple enumeration and discussion of the diseases of poultry. Actually, there is considerable material on normal anatomy and physiology of birds. Likewise, there is much information on diseases of species other than the common domestic species. Particularly frequent are references to wild galliform species, ducks, and geese. Among the chapters of interest to ornithologists, are those dealing with digestion, anatomy, avian hematology, paratyphoid infections, avian tuberculosis, listerellosis, botulism (including western duck sickness), diseases caused by fungi, the "avian leukosis complex," psittacosis, equine encephalomyelitis virus in birds, fowl pox, external parasites, and parasitic worms. Beyond its important place in poultry science, this book is a truly important contribution to fundamental avian biology. It can be strongly recommended to investigators in many fields of ornithology.—D. S. F.

**94. Island Life: A Study of the Land Vertebrates of the Islands of Eastern Lake Michigan.** Robert T. Hatt, Josselyn Van Tyne, Laurence C. Stuart, Clifford H. Pope, and Arnold B. Grobman. 1948. Cranbrook Institute of Science. Bulletin No. 27. Bloomfield Hills, Michigan. xi + 179 pp. \$4. The principal thesis of this attractive volume is a comparison of the faunae of the islands of eastern Lake Michigan with reference to the fauna of the adjacent mainland. Chapter 6 (pp. 69-114), prepared by Doctor Van Tyne, is a careful analysis of the occurrence and status of birds in these islands. The avifauna of each island, and of the islands as a group, is poorer in number of species than that of the mainland despite the fact that birds, unlike the other land vertebrates, could reach the islands by flight. This is further evidence that isolation is not the sole factor in the poverty of insular faunae. Most of this chapter is a carefully annotated checklist. Chapter 6 is a brief, but interesting analysis of the factors influencing distribution. The influence of man, media of dispersal, diversity of plant communities, role of absolute areas of the individual islands, lake level, predators and pests, are discussed briefly but intelligently. This volume is an important contribution both to the knowledge of the natural history of the region concerned and to the science of zoogeography.—D. S. F.

**95. Forests and Conservation of the Soil. Their Cultural and Economic Importance.** (El Bosque y la Conservacion del Suelo. Su Importancia Cultural

y *Economica*.) Helmuth O. Wagner and Hans Lenz. 1948. Editorial Cultura, T.G., S.A. México, D.F. 169 pp. In this admirable book the most modern scientific discoveries in tropical soil management are illustrated by series of graphic "cartoons" of the effects of different practices on specific plant associations and their dependent human communities. Each series is explained by concise text which should be perfectly understandable to the farmers and youths for whom it is intended. Tropical and subtropical soil is far more quickly ruined by mismanagement than that of temperate zones. A rich oak hillside, after lumbering and untraced corn growing, requires only *six to ten* years to become a cactus desert! This change also produces a local decrease in rainfall, sharp fluctuations in daily and seasonal temperatures, and perhaps the drying of springs supplying towns hours or days distant. Similar results of soil mismanagement are widely prevalent, but little understood, in our own Southwest, and this book should be translated into English for the benefit of that region. This volume is a scientific step in the extension of the pathetically small amount of self-sustaining agriculture in the tropics.—Constance Nice.

**96. Louis Agassiz, Scientist and Teacher.** James D. Teiler. 1947. Graduate School Studies, Education Series No. 2, Ohio State University Press, Columbus, Ohio. 145 pp. Louis Agassiz was not only a brilliant investigator but an inspiring teacher. He felt it his mission "to diffuse his contagious enthusiasm for the study of nature among the masses." (p. 49.) With his research students, his method was to "*leave them alone with nature* until sometime, somehow, they were enabled to make their own inductions." (p. 81.) He "required not only a monograph in the student's specialty, but also a scientific lecture, a popular lecture and a simple child's tale." His pupil, the geologist, Nathaniel Shaler, said that Agassiz wished them "to be able to give in a single sentence the whole matter of months of labor, in a form so true that a scientific man could read in it, not only the extent of your knowledge, but also the habit of your mind," (p. 78.) He insisted that his students should *see for themselves*, and also pass on their knowledge to others.—M. M. Nice.

**97. Animal Wonderland.** Frank W. Lane. 1948. Country Life Limited, London, viii + 232 pp. 15s. Thirteen essays on oddities in nature—Birds *versus* Aeroplanes, Do Birds Fly Pick-a-back? Have Animals a Time Sense? The Split-Second in Nature, Dumb Animals, etc. "Death of a Species" tells of the Passenger Pigeon, "A Species that was Saved" of the American Bison. Twelve pages are devoted to "The Mystery of Bird Anting" with 43 references and five pages quoted from H. R. Ivor with three pictures of his birds anting. Insects, fish and mammals are given much attention, particularly in brief accounts of experiments on instinctive and learned behavior. The author has gathered his material from far and near, as is evidenced by the 600 references. Each chapter has been checked by an expert. The interest of the book is enhanced by 80 photographs.—M. M. Nice.

**98. Animals Alive.** Austin H. Clark. 1948. D. van Nostrand Co., Inc., 250 Fourth Avenue, New York 3. vii + 472 pp. \$4. This fascinating book, written by one of America's most versatile and skillful zoologists, is an able presentation of a wide selection of fundamental principles of ecology, life history, zoogeography, and many other facets of animal biology. There is a welcome procession of fresh illustrative material quite distinctive from the frequently stereotyped examples so often characteristic of the discussion of principles of biology. Part 1, consisting of eight chapters, considers many of the interesting relationships between man and other animals. The second, third, and fourth parts deal with land animals, fresh-water animals, and sea life. Three chapters are of particular interest to ornithologists; Chapter 3 deals, in part, with domestic birds and their origin; Chapter 15 presents briefly some of the aspects of the

general biology of birds; Chapter 38 discusses marine birds and marine reptiles. Any reader will find much fascinating reading in this book; biologists, and particularly teachers of biology, will find it to be a valuable source of a huge variety of interesting facts illustrative of many important principles of biology.—D. S. F.

**99. Bird Photography.** G. K. Yeates. 1946. Faber and Faber Limited, 24 Russell Square, London, W.C.1. 120 pp. + 48 plates of photographs, 12s. 6d. A veteran photographer, who, in this useful little volume, presents evidence of his proficiency in 48 excellent plates, discusses concisely the fundamentals of bird photography. All items of equipment, blinds ("hides"), focus, "gardening," exposure, photography of birds in flight, flashlight photography, remote control photography, nests and young, negative material, and development are among the subjects treated. For anyone who desires to accomplish fine bird photography, this book should be invaluable. It should likewise be treasured by the connoisseur of bird portraits.—D. S. F.

**100. The Hunters and the Hunted.** Sacheverell Sitwell. 1948. Macmillan. New York. ix + 314 pp. \$4.00. This work by the English poet and art critic "has for subject the tentative returning of the arts of peace." It is divided into four Books, Book III being devoted to "The Kingdom of Birds," a discussion of the aesthetic value of many bright plumaged families, particularly Hummingbirds, Birds of Paradise, Fruit-eating Pigeons, Sun Birds, Woodpeckers, Parrots and other brilliant forms. Although the author is not strong on systematics nor on the matter of behavior, and has been misled as to the colors of our Blue Jay, nevertheless his descriptions of the extraordinary beauty of his subjects are a delight and inspiration.—M. M. Nice.