station it occupied the year before. It also appears that where summer and winter areas are well separated, the course the individual bird of such species takes between them, varies.

This Song Sparrow would have had the status of a summer resident at East Jaffrey on June 19, and when it (presumably) came from further south in April, the East Jaffrey area was probably its objective anyway. That is it overshot the mark up the Connecticut Valley flyway.

Evidence has led me to believe that spring migrants not infrequently do overshoot the mark. The appearance in the New York region of stragglers of such early species as Robin and Grackle well ahead of any general arrival, is frequently correlated in date with a general movement of the respective species further south; and there are occasional very early dates here for late arriving species (which also breed in the South), such as Kingbird and Indigo Bunting, that correspond to their normal arrival in the South. The spring migration records here of such species as Blue-gray Gnatcatcher and Yellow-throated Warbler are most easily so explained.

Excepting this last group, I have had no opinion as to whether the birds mentioned were actually north of their breeding area objective, or merely out of time; or as to whether if nor h of, they would return to it. There seems no reason why they should not do so, as migrants certainly direct their course by something (so far quite unknown), other than or in addition to the compass.

There is a complication which may have had a bearing on the case of the Song Sparrow (No. 39-168058) in question. Wells River, in the Connecticut Valley, is in fact some 90 miles north of East Jaffrey, in the hills, but presumably not so faunally.—J. T. Nichols, New York, N. Y.

RECENT LITERATURE

Reviews by Donald S. Farner

BANDING

1. Bird-Banding by the Museum of Natural History of Göteborg in 1940. (Göteborgs Naturhistorika Museums ringmarkingär av Flyttfåglar under 941.) L. A. Jägersköld. 1942. Göteborgs Musei Arstryck 1942: 70-90. In 1941 7,917 birds in 126 species were banded making a total of 121,961 birds in 205 species banded since 1911. There have been 4,065 (3.3 percent) recoveries and returns since 1911. Individual recovery and return records for 1941 are given. An interesting record is that of a Fieldfare, *Turdus pilaris* L., recovered June 1, 1941 at the place where it was banded as a young bird June 8, 1939. Species banded in greatest numbers in 1941 were: Black-headed Gull, *Larus ridibundus* L. (464); Common Tern, *Sterna hirundo* L. (232); "Kentsk" Tern, *S. cantiaca* Gmel. (205); Starling, *Sturnus vulgaris* L. (518); Yellow Bunting, *Emberiza citronella* L. (326); Gray Flycatcher, *Muscicapa atricapilla* L. (776); Great Titmouse, *Parus major* L. (800); House Martin, *Chelidonaria urbica* (L.) (729).

2. Bird Study through Banding.—Dayton Stoner. 1942. *The Scientific Monthly*, 55: 132–138. This little paper is packed with interesting information about the Bank Swallow, *Riparia riparia riparia* (L.). Since 1923 6,834 individuals were banded and 247 returns recorded. The "homing instinct" is well marked. No recovery was made more than 12 miles from the point of banding. Most recoveries were made in the colony in which the birds were banded. Several

birds were captured in the two nesting seasons following the season in which they were banded; one was captured as a return in three successive nesting seasons. Burrows are excavated at the rate of three-quarter inches per day. There is evidence of both polygamy and polyandry. Average clutch is 4–5; average weight of the eggs is 1.4 grams; incubation requires 14–16 days and is shared by both parents. The young attain their maximum weight, 16.5–19.5 grams, at 13–16 days and attempt their first flight at 19–21 days. The average weight of adult birds is 14.3 grams (range—11.8–20.3). Body temperature varies from 90° F.–112° F. (mean—107.4° F.); from 90° F.–115° F. in the young. Principal destructive agents are skunks, foxes, brown rats, and sliding banks.

MIGRATION

3. The Distribution and Migration of the Hudsonian Curlew.—P. A. Taverner. 1942. The Wilson Bulletin, 54: 3–11. "There are two distinct populations of the Hudsonian Curlew, *Phaeopus hudsonicus* Latham, breeding, migrating, and wintering on opposite sides of the American continents." The western population migrates up and down the Pacific coast while the eastern group migrates up the Atlantic coast to New Jersey and thence northward to Hudson Bay. It is suggested that the complete separation of these two population is recent since no racial distinction can be detected between them.

ECOLOGY AND POPULATION STUDIES

4. Guano Birds. (Aves Guaneras).—William Vogt. 1942. *Boletin de la Compañia Administradora de Guano*, 18 (3). 132 pp. The results of a three-year ecological investigation of guano-producing birds of the Peruvian coastal islands. There are three species which produce guano in appreciable quantities: a cormorant, *Phalacrocorax bougainvillii;* a booby, *Sula variegata;* and a pelican, *Pelecanus occidentalis thagus*. The cormorant nests in microclimates of mildly high temperatures and is completely dependent on the anchovy for food. The boobies nest either on cliffs or on level places in warmer microclimates but may compete with the cormorants for nesting sites. They are not as dependent upon the anchovy for food. This species has declined steadily since 1919 when it was the most abundant guano-producer. The reason for the decline is not known although it is correlated with the shift of the nesting population from the level places to the cliffs as the level nesting sites have been taken over by the cormorants. The pelican, a species of tropical origin, can breed in microclimates of high temperatures. It can feed on fish which are larger than the anchovy. Most of the observations were made on the cormorant since it produces the bulk of the guano and is the most numerous of the three species. Each bird produces 15.8 kg. guano per year. Using this figure and the annual harvest data of the Guano Administration it was possible to estimate the populations for previous years. It was found that there has been a gradual increase in population under the Guano Administration. The data also revealed the operation of a seven-year population cycle. There were maxima in 1910 (4 million birds), 1917 (5 million), 1924 (9 million), 1933 (10 million), and 1938 (11 million). Minima occurred in 1912 (2.5 million), 1919 (3.0 million), 1926 (5 million), 1931 (6 million), 1935 (8 million), and 1940 (8 million). The anomalous 1933 maximum and 1931 and 1935 minima are possibly to be attributed to "a temporary change in management." Minima can be correlated with climatic disorders recorded in 1911, 1918, 1925, and 1939. These disturbances are characterized as periods of unusual amounts of west wind, abnormally high ocean temperatures, and unusual amounts of rainfall. A decrease in phytoplankton and zooplankton with an accompanying decrease in the anchovy population doubtlessly results from these climatic disturbances. Cormorants because of lack of sufficient food supply then abandoned nests in large numbers with a consequent decline in population. Cormorants spend one month in courtship, about one month in

laying and incubating, and two months rearing young. Incubation lasts 27 days and is shared by both parents. Although nests can be found during all months of the year the greatest number is to be found in November just preceding the period of greatest abundance of anchovy (December and January), an interesting adaptation of the reproductive cycle to the cycle of food availability. Suitable locations contain an average of 314 nests per 100 sq. km. The mean clutch is 3.13 ± 0.101. Eggs are laid at two day intervals. Both parents carry food to the young. However food is always carried to the nesting site rather than to the bird's own young so that the rearing of the young is actually a communal process. This paper is a contribution of unusual significance to avian ecology.

5. Sex Ratios in Winter Duck Flocks.—R. C. Homes. 1942. *British Birds*, 36: 42–49. Winter flocks were observed and counted at London, Warwicks, Oxon, and Lanarks periodically from October, 1938 to March 1939. The numbers of each sex and the numbers of birds which could not be sexed by field observation were recorded for each flock. Results (condensed) for species in which significant numbers were observed are as follows: Mallard, *Anas platyrhynchas platyrhynchos* L., 21,723 observed, 52 per cent males, percentage of males by flocks varied from 48–62. Teal, *Anas crecca crecca* L., 3,205 observed, 58 per cent males, percentage of males by flocks varied from 52–62. Wigeon, *Anas penelope* L , 3,037 observed, 55 per cent males, percentage of males by flocks varied from 52-60. Common Pochard, *Aythya ferina ferina* L., 4,712 observed, 60 per cent males, percentage of males by flocks varied from 51–76. Tufted Duck, *Aythya fuligula* (L.,) 16,343 observed, 56 per cent males, percentage of males by flocks varied from 45–69. The numbers of birds included in the above totals which could not be sexed were: Mallard (5,032), Teal (1,005), Wigeon (677), Common Pochard (197), and Tufted Duck (1,991). It would seem that there is a possibility that these unsexed birds could be of a greater percentage of females, thereby introducing some error into the calculations of sex ratios.

6. Lyrebirds of Sherbrooke.—A. G. Cambell and Alexander Gray. 1942. *Emu*, 42 (Part 2): 106-111. The Sherbrooke portion (about 2,000 acres) of the Dandenong State Forest near Melbourne contained 20 nesting pairs of Lyrebirds (*Menura superba*), in 1941. A map shows the locations of the nests with reference to the habitats.

REPRODUCTION

7. The Seasons in a Tropical Rain-forest (New Hebrides). Part 5. Birds.—Journal of the London Linnean Society. *Zoology*, 41: 50–70. This study is concerned primarily with the Golden-Whistler, *Pachycephala pectoralis*, a non-migratory species widely distributed throughout the East Indies and Australia. Its altitudinal range is from sea level to 3,800 feet. The recognition of insular races is based on differences in the plumage of the females since males show no differentiation. The nest is constructed by the female only but both parents incubate and feed the young. The young leave the nest after 11 days. The breeding season is in June and July. Testes attain their maximum weight in the period from May to July; the greatest number of large oocytes in the ovaries occurs in May and June. This maximum development of the gonads therefore occurs in the period of *decreasing and minimum amounts of daylight*. However, in the same species in Australia the breeding season occurs in the period of *increasing and maximum amounts of daylight*. In the New Hebrides the nesting season is in the "dry season" whereas in Australia it is in the "wet season." In the New Hebrides the mean daily temperature varies only 3° C. throughout the year and cannot be regarded as a factor in the regulation of the reproductive cycle. There are no

periodic changes in type and quantity of food available or in feeding habits. In the New Guinea population of this species there is no periodic nesting, nests being found throughout the year. With changes in daylight, temperature, food, and rainfall apparently eliminated the author makes no suggestions as to possible factor which may stimulate the development of the gonads.

8. Notes on the Nesting Habits of the American Robin (Turdus migratorius L.).—Joseph C. Howell. 1942. *The American Midland Naturalist*, 28: 529-599. An extensive series of observations made at Ithaca, N. Y. Both sexes return to the same region to nest each year. The male appears to select the nesting territory. The nesting territory may vary considerably in size. When it is small the parents obtain food elsewhere, frequently in a common feeding ground. The territory is defended against other members of the species. The female is the more energetic defender of the nest itself. "In the courtship of the Robin both voice and display are important. While displaying the male spreads and and elevates his tail, shakes his wings, and inflates his throat. Both the display and the mating usually occur on the ground." One case of polygamy in which two females shared a nest is recorded. Both members of the pair influence the selection of the nesting site. The nest is usually built by the female. Early in the season the time required for the building of the nest is five or six days; the later nests are built in two or three days. Occasionally a pair will use the same nest twice during the season. "The Robin usually lays three or four eggs, four being the commoner number in the earlier part of the nesting season." Experiments involving removal of eggs failed to stimulate the laying of more than the average clutch. Average measurements of eggs were 28.4 mm. x 20.7 mm. Average weight, fresh, was 6.26 grams. When a nest with eggs is destroyed another is built and another clutch of eggs layed within 10 days. The female alone performs the incubation which lasts "usually" 13 days. Both parents feed the young. Both share in the removal of excrement which is either eaten or carried some distance from the nest and dropped. Food of the young is largely (70 per cent) animal matter. The young remain in the nest from 9-16 days. Usually two (rarely three broods are raised during a season. Pairs may remain intact for the season. Testes and ovaries attain maximum development during the first week in May. Thirty-two per cent of the first nestings in 1937 were successful (one or more young raised); 38 per cent of the first nests in 1938 were successful. Second nestings in 1937 were 75 per cent successful. Each pair raised 3.9 young per season (1.3 young per nest), a rather high reproductive rate for a passerine species. It is difficult to gauge the significance of some of the observations recorded because the number of birds involved is not stated.

9. Barking Owl (Rather than "Winking Owl"). Record of Nesting Habits.—David Fleay. 1942. *Emu*, 42 (Part 1): 25-30. In this species, *Ninox connivens*, the male is larger than the female and possesses a deeper voice. Observations were made on the nesting habits of a pair held in captivity. The male scooped out a depression in a hollow log which was used as a nest. The female laid the first egg on July 24 and started incubation immediately. The second and third eggs were laid at intervals of three and six days respectively after laying of the first. The female remained on the nest continuously after the start of incubation and the male became "extraordinarily savage." The owlets were hatched at three-day intervals beginning August 30, making the incubation period 37 days. At the age of four months the young had developed adult plumage.

10. Incubation of the Spotted Nightjar.—P. A. Bourke. 1942. *Emu*, 42 (Part 1): 44-48. This paper contains some interesting observations on behaviour of nesting birds of this species, *Eurostopodus guttatus*. Among these observations

is that of a bird which was disturbed while on the nest: "She (?) then flushed suddenly and silently, flew some twenty feet away and settled on the ground, where she took several steps before squatting in a peculiar position with lowered head and with the tail-tip raised until it was about six inches from the ground. In that position she exactly resembled a piece of broken branch, . . ." The incubation period is stated to be at least 33 days. Another bird when disturbed while on the nest "alighted only a few steps away, turned towards me, opened her bill, and elevated her spotted wings in a manner reminiscent of an alighting tern."

11. Whero. Island Home of Petrels and Other Birds.—L. E. Richdale. 1942. *Emu*, 42 (Part 2): 85–105. This small rocky island lies near Stewart Island which is the most southern island in New Zealand. It is the nesting place of Skuas (*Catharacta skua lonnbergi*); White-faced Storm-Petrel (*Pelagodroma marina*); Diving Petrel (*Pelecanoides urinatrix*); Mutton-Bird (*Puffinus griseus*); Whale-Bird (*Pachyptila vittata*); and Narrow-billed Prion (*Pachyptila turtur*). The population for the island for the 1940–1941 season by species was estimated to be: Skuas, 2 (1 pair); Mutton-birds, 400; Storm Petrels, 1,200; Whale-birds, 50; Narrow-billed Prions, 400; Diving Petrels, 200. The area of the island is about 0.75 acres. All birds except the Skuas disappear during the day. During the midsummer the Mutton-birds return first at night arriving between 9–10 P.M. Diving Petrels arrive between 10 P.M. and midnight. At 10:15 P.M. the first Storm Petrels and Narrow-billed Prions return. By 2:30 A.M. Storm Petrels and Narrow-billed Prions leave the island. Courtship activities of the Mutton-birds last from 2–4 A.M. at which time they depart. The Diving Petrels leave about 3 A.M. Observations of interest are the hatching of an egg despite four days' desertion during incubation (Mutton-bird) as well as a period of 13 days of continuous incubation without relief by one Mutton-bird. Occasionally young Mutton-birds were allowed to go for two days without feeding.

PHYSIOLOGY

12. Concerning the Development of Temperature Regulation in Various Nestling Birds. (Ueber die Entwicklung der Temperaturregulation bei verschiedenen Nesthockern.)—Alfred Boni, *Schweizerischen Archiv für Ornithologie* 2, 1942: 1–58. A comparative study was made at the University of Basel of the rate of development of the physiological mechanism for regulating body temperature in three species of altricial birds: *Melopsittacus undulatus*, a parrot; *Jynx t. torquilla*, a woodpecker; and *Lanius c. collurio*, a shrike. All body temperatures were taken rectally by thermocouples, and the birds were exposed to various air temperatures from 99° to 67° F. until their body temperatures reached an equilibrium.

All three species were of approximately the same size (33–37 gms.). Nestling parrots were obtained from a zoo, the other birds from wild nests. The effective ages of the nestling woodpeckers and parrots were determined by comparing their stage of growth with a normal growth curve for the species, and these effective ages were used rather than the actual ages, which were often unknown. The same nestling was often used more than once with intervening rest periods of two or more days in the nest. These factors lend some doubt on the accuracy of the comparisons made between species as to the time of temperature development.

All species were essentially cold-blooded in their temperature reactions at hatching, their body temperatures being only a few tenths of a degree above that of the air. Even in a precocial species, *Coturnix c. coturnix*, a quail, body temperatures at hatching were found to vary considerably with fluctuations in air temperature. At 72° F. air temperature, the development of ability to maintain constant body temperatures occurred most rapidly in the shrike between the 2nd and 11th days after hatching, in the parrot between the 3d and 11th days, and in

the woodpecker between the 3d and the 12th–13th days. For comparison, this period in the house wren, *Troglodytes aedon*, occurs between the 3d and 9th days. Regulation of body temperature developed earliest at high air temperatures and at later ages for lower and lower air temperatures. Both adult and nestling birds were sensitive to high temperatures above 93°–97° F., when the relative humidity was 70%. The greater intolerance of the woodpecker to these high temperatures is correlated with its inability to increase the rate of breathing more than 150 times per minute, while with the other species this rate could be increased to 300 times per minute. Panting first occurred in the parrot at 6 days of age. The rate of breathing was lowest in the parrot between 84° and 93° F. and increased not only with rise in air temperature, but, after temperature regulation became eetablishd, increased also with a drop in air temperature.

Activity tended to lower the body temperature of nestlings 4 days of age and older, at the lower temperatures. At low air temperatures the birds bunched together in the nest to conserve heat, but at high temperatures they separated as far as possible to give the maximum surface for its dissipation.

Concerning factors involved in the regulating mechanism, it is demonstrated that the warm-blooded condition will develop even in the denuded bird although at a slower rate; so feathers are not absolutely necessary. Other factors are mentioned but not discussed.

The paper is a valuable contribution to our knowledge of the temperature limits to which nestling birds are adjusted and to the rate and manner in which temperature regulation develops, but adds no important new information in the analysis of the physiological mechanisms involved.—S. CHARLES KENDEIGH.

13. Muscle Tremors and the Development of Temperature Regulation in Birds.—Eugene P. Odum. 1942. *The American Journal of Physiology*, 136: 618–622. The young of the House Wren, *Troglodytes aedon aedon* Vieillot and the Black-capped Chickadee, *Penthestes atricapillus atricapillus* (L.) are poikilothermic at three days. At this stage there is no thermal regulation; there are no muscle tremors; and heart rate is directly proportional with the temperature of the environment. With the development of homoiothermy, muscle tremors occur when the environmental temperature is lowered; heart rate becomes inversely proportional to temperature. With decreasing temperature periods of tremors become more frequent until steady shivering occurs. "The muscle tremor heat production mechanism apparently develops more rapidly at first than does the control of heat loss indicated by feather growth." It is stated that preliminary experiments with the precocial species the Ring-necked Pheasant, *Phasianus colchicus colchicus* (L.), reveal muscle tremors as early as the ninth day of incubation when the temperature is lowered to 37.2° C.

BEHAVIOUR

14. The Winter Flocking of the Pied Currawong.—N. L. Roberts. 1942. *Emu*, 42 (Part 1): 17–24. Although the interpretations in this paper are sometimes anthropomorphic it nevertheless contains some interesting observations. Among the interesting habits of the flocks of this species, *Strepera gracula*, is that of "tweaking," the snapping off of twigs and small branches from trees and allowing them merely to fall to the ground. Of interest also are the observations on "topping the tree" in which one bird occupies the topmost branch of a tree until another dives or tumbles on him and then replaces him. The new occupant remains on the branch until displaced in a similar manner by another member of the flock. Pairing begins in early August while the birds are still in flocks.

HEREDITY, VARIATION, AND EVOLUTION

15. Quantitative Studies in the Geographical Variations in Birds.—

The Common Guillemot (Uria aalge Pont.).—H. N. Southern, 1941. Proceedings of the Zoological Society, Series A, 111: 255-276. The bridled form of this species is stated to be a single factor mutant which is present in varying proportions in the North Atlantic colonies. The proportion of the bridled form increases from south to north (less than 2 per cent in southern England, 15 per cent in northern Scotland, more than 50 per cent in northern Norway and in Iceland) and in a lesser degree from east to west. This is well substantiated with statistically analyzed counts. It is suggested that this distribution is due to the unimpeded spread of an advantageous mutation or that a balanced condition has been reached due to "counter-selection" at various levels by environmental factors. The data appear neither to support nor deny either of the suggestions.

16. Adaptive Modifications for Tree-Trunk Foraging in Birds.—Frank Richardson. 1942. University of California Publications in Zoology, 46: 317-368. $0.75. Quantitative comparative anatomical studies were made with the following species with the object of demonstrating tree-climbing modifications: Downy Woodpecker (*Dryobates pubescens*); Barred Woodhewer (*Dendrocolaptes certhia* White-breasted Nuthatch (*Sitta carolinensis*); Brown Creeper (*Certhia familiaris*) and Bewick Wren (*Thyomanes bewickii*). In these species there are only a few common adaptations such as the shifting of the insertions of the iliofibularis and tibialis anterior muscles and the increased size of the latter. The species which use the tail for support show in common such adaptations as the strengthening of the shafts and rami of the supporting retrices and increased size of the pygostyle and caudal vertebrae. There are many excellent and well-chosen tables, diagrams, and drawings.

17. Archaeopteryx, an Ancestor of the Birds. (L'Archéoptéryx, Un ancêtre Oiseaux.)—A. Reichel. 1941. Nos Oiseaux, 159: 93-107. A description of the anatomy of this interesting fossil with some suggestion concerning the nature of its biology and ecology.

BOOKS AND MONOGRAPHS

18. The Ivory-billed Woodpecker.—James T. Tanner. 1942. Research Report No. 1 of the National Audubon Society, 1006 Fifth Avenue, New York, N. Y 111 pp,, $2.50. A personal examination of 45 different areas by the author was made to determine the present distribution and status of the Ivory-billed Woodpecker (*Campephilus principalis* (L.)). This survey together with careful observations of the birds in the Singer Tract, Madison Parish, Louisiana required 21 months of intensive work in the field. It was concluded that six separate areas probably still contain Ivory-bills. The estimated population for all areas in 1939 was 22 individuals. The population of the Singer tract has undergone a gradual decrease to a total of six individuals in 1939. More than 150 records and reports were critically examined in order to prepare maps of the original distribution of the species. The Ivory-bill does not seem to be linked to any single type of habitat. In the bottomlands and in the Mississippi Delta region it was always associated with virgin stands containing sweet gum and various oaks. However in Florida the birds showed a wide tolerance of habitats. Ivory-bill habitats are always characterized by an abundance of other woodpeckers such as the Pileated and the Red-bellied. The food of the Ivory-bill consists largely of wood-boring larvae (Cerambycidae, Buprestidae, and Elateridae). These are secured by *scaling* the bark from trees (usually one foot or more in diameter) which have been dead less than two years, The Ivory-bill rarely *bores* for food. Hence the presence of relatively large numbers of recently dead trees of sufficient size may be the determing factor in Ivory-bill habitats. Seeds, nuts and berries are unimportant food items. The Ivory-bill has no competitors for its food supply. The disappearance of the species can be correlated with the removal of virgin timber by logging operations.

The maximum density of the species was probably one pair per six square miles. Ivory-bills probably remain sedentary until the food supply decreases causing them to wander elsewhere. Ivory-bills breed from January to May. A second nesting may occur if the first nest is broken up. Average clutch is 2.9. Incubation time is probably 20 days. Young probably stay in the nest for five weeks. Both parents carry food to the young. The male cleans the nest. Young are fed by the parents for about two months after they leave the nest. Six nests were observed in the Singer tract. Average number of young per nest was 2.1. Three of the six nests were successful. One young was raised in each. The author apparently believes that the species can be preserved in spite of its present low ebb. The areas which are recommended as possible Ivory-bill refuges are the Singer tract in Louisiana, the Big Cyprus area in Florida, the Apalachicola River Swamp in northwestern Florida, and the Santee River Swamp in South Carolina. In spite of the lack of adequate quantitative data, now impossible to obtain, this report is a most significant contribution to the science of ornithology.

19. The Roseate Spoonbill.—Robert Porter Allen. 1942. Research Report No. 2 of the National Audubon Society, 1006 Fifth Avenue, New York, N. Y. 142 pp. $2.50. This report summarizes an investigation of 25 months augmented by an excellent fund of previous experience with the Roseate Spoonbill (*Ajaia ajaja* (L.)). The present range of this species extends from Sonora and the coast of Texas, Louisiana and Florida south to lCochagua, Chile and the pampas in the Province of Buenos Aires in Argentina. There are at present eight nesting localities in the United States; five in Texas, one in Louis ana, and two in Florida (both insular). Except for the absence of the species from much of the southern Florida mainland and a portion of Louisiana its present distribution is probably very similar to the original distribution which existed up to 1860-1865. From 1865-1890 the Roseate Spoonbill virtually disappeared from its entire range in the United States due to its destruction by plume-hunters and settlers. From 1890-1919 there were probably no more than three small colonies of breeding birds with a total of 25 pairs. There were no breeding birds in Texas. The recovery in the Texas-Louisiana Region (1921-1940) to numbers possibly approx mating the original population was due to protective measures and possibly to the flourishing Mexican colonies. The non-recovery of Florida populations in spite of protection may be due to the present diminished status of Cuban and South American colonies. In 1941 there were about 5,000 individuals in the United States, 89 per cent of which were in the Texas-Louisiana Region. At least 3,500 of the 5,000 were non-breeding birds (mostly immature) which had migrated northward from southern colonies after the breeding season. Spring migrations of breeding birds into Louisiana and Texas occur in February and March. Summer flocks of non-breeding birds arrive in May and June. Fall migration is diffuse. Two incoming migrations of breeding birds occur in Florida; a spring migration in April and May to the mainland (small and perhaps non-existent some years), and a fall migration in November to Florida Bay (about 30 birds per year). A large spring migration of non-breeding birds (99 per cent juvenile) arrives in Florida in November from the south. Breeding cycle behavior is divided as follows: (1) *Preparing phase* characterized by activity of the flock as a whole in "sky-gazing" and concerted "up-flights." (2) *Prenuptial phase* in which males begin to defend territories and in which pairing occurs. (3) *Copulation and Nest-building phase.* Male brings nesting material to the female who does the actual building. (4) *Incubation phase.* Average clutch is 2.7. Incubation time is 23-24 days. Both sexes incubate. Nest relief occurs three or four times during the daylight hours. (5) *Hatching and Caring for Young.* The principal predators, grackles and raccoons, are probably detrimental only to small colonies. The concerted action of spoonbill colonies in response to slight disturbances may result in mass

desertion of nests. Spoonbills may be driven from their nesting territories by herons and egrets. This species requires shallow water with a minimum of tidal fluctuation in the neighborhood of the nests and roosts. This provides food as well as a temporary habitat for the young after they leave the nest. Although sufficient quantitative data are lacking it is obvious that food consists largely of minnows and other small fish. Aquatic insects and crustaceans are items of considerable importance. Mollusks and plants are unimportant as food. One partial and three complete moults in the course of 32 months occur in acquiring adult plumage. Adults molt twice a year. Temporal relationships of molts in the Florida and Texas-Louisiana populations are explained in excellent diagrams. Ectoparasites described as "seed-ticks" or mites should have been identified. A combining of Parts I (Distribution) and II (Abundance) would have avoided duplication and might be of advantage to the reader. The establishment of a colony of White Spoonbills (*Platea'a leucordia* L.) in Muy, Holland, under protected conditions (1924–1939) as described by Van Oordt appears to be comparable to the re-establishment of the Texas-Louisiana colonies and should have been cited. Suggestions made for further research and for the preservation and increasing of the present population appear to be sound and logical.

20. Summer Birds of the Allegany State Park.—Aretas A. Saunders. New York State Museum Handbook 18. The University of the State of New York Press. 1942. 313 pp. $0.50. This usable little book was prepared primarily for students of the Allegany School of Natural History. It contains a section describing the habitats of the region, a useful key, suggestions for field identification, and descriptions of all birds recorded from the region. It is the result of experience in field teaching in ornithology and is a useful contribution to the technique of teaching birds.

21. Distribution and Variation of the Horned Larks (Otocoris alpestris) of Western North America.—William H. Behle. 1942. University of California Publications in Zoology, 46: 205–316. $1.25. This paper is devoted principally to a revision of this variable species in which fourteen western subspecies are recognized, described, and mapped. In addition to this, a definite contributoin to the biology of geographical variation and distribution is made.

22. Bird Display. An Introduction to the Study of Bird Psychology.—Edward A. Armstrong. 1942. Cambridge at the University Press. New York. Macmillan. 381 pp. $5.50. This book with its vast array of references—some 600—describes display in many birds and points out "similarities of behaviour of birds and other creatures varying from insects and fishes to man." Aristotle and Pliny are cited, and the text is enlivened at places by quotations from the poets. Many books suffer from a lack of documentation; in this case the author has erred in the opposite direction. He is too uncritical in regard to his sources: he draws conclusions from descriptions from novels and books of adventure (p. 185), althoughregretting that "we are not told how the sexes were assorted in this dance" of the non-sexually dimorphic Whooping Crane; he quotes as fact Schjelderup-Ebbe's unfounded assertions of rigid peck order in large numbers of species (p. 171) and his fable of the despotism of the hen sparrow towards her wooer with consequent race suicide (p. 175); he devotes considerable space to Verrill's "Strange Birds and Their Stories," although characterizing one account as "rather vague and doubtful" (p. 231). Occasionally there is carelessness: some of Tinbergen's ideas are assigned to Davis (p. 249); Muscovy Duck actions are attributed to geese (p. 250); while surprising statements (p. 177) and general conclusions (p. 253) are given on the authority of Rothschild (1941), the reference in the bibliography being "personal communication."

The book consists of a great number of anecdotes to which some theoretica remarks on "behaviour complexes" are tacked. "We may conclude that nest-building arose through emotion seeking and finding an outlet in ways which were at first aimless or destructive; but even the venting of spite on the harmless grass may be formalised so that it becomes valuable in assisting the survival of the species" (p. 28). Injury feigning is apparently considered as due to "conflicting or thwarted impulses" (p. 86). It is suggested that "elaborate sexual display and 'injury-feigning' . . . have been built up from the begging movements of chicks — further confirmation of our theory that many display-patterns have evolved from attitudes of the hungry young" (p. 85).

Although references are made to much of the most important recent work in the field, the reviewer feels that no sure foundation is laid in this "Introduction to the Study of Bird Behaviour", that the general effect is confusing and that the book does not merit its sub-title. There are indices to Birds and Other Organisms, to Subjects and to Authors, and a list of scientific names arranged by families, besides 22 plates showing photographs of birds in various displays.—M. M. NICE.

Griffin "Homing experiments with herring gulls and common terns."

ANNOUNCEMENT

BIRD-BANDING takes pleasure in announcing the appointment of Dr. Donald S. Farner as Associate Editor to replace Mrs. Margaret Morse Nice, resigned. It has not been possible for Dr. Farner to cover all the literature accumulated in the interval between Mrs. Nice's resignation and his acceptance of the Associate Editorship, but it is hoped to bring the abstracting up to date in succeeding issues.