

was returned to its nest. In a few minutes the parent returned and dragged out the same nestling. It fell halfway through the hedge and caught in some twigs. The parent flew down and pecked at the band so vigorously that I immediately rescued it. The banded leg was badly scratched and the tarsus was broken about one-third the way from the distal end. This time the band was removed before the injured bird was returned to the nest. In a few minutes the adult returned and dragged out another of the banded nestlings. The injured one (now unbanded) was not again molested, proving that it was the band and not the bird which was objectionable to the parent. The other two bands were now removed and all three nestlings were accepted by their parents.

It seems evident that the shiny bands appeared as foreign objects to the adults and that they were instinctively removed from the nest. The fact that a young bird was dragged with the band was insufficient to nullify this strong instinct. Keeping a nest clean of shell fragments and light-colored feces undoubtedly has survival value, since their presence would tend to render the nest site more conspicuous to predators. After the nestlings had become well feathered, they were rebanded on the eighth day. This time the adults paid no attention to the bands which were fairly well hidden under the light colored feathers of the breast.

The injuries on the first bird healed rapidly. For two days it grew very slowly, but by the third day it had caught up in weight and was as far advanced in behavior and feather development as the others. The injured tarsus bone seemed to be healing and the foot was gradually regaining its motility. The bone had healed at a 15 degree angle.

The present episode with Song Sparrows seems to verify the conclusions that I made in regard to a Prairie Horned Lark (*Auk*, vol. 61, pp. 648-650, 1944). A nestling banded on the sixth day was found dead ten feet from the nest. Here too it is probable that a too zealous parent, while trying to remove the shiny band from the nest, dragged the bird to its death from hunger and exposure.—Harvey B. Lovell, Biol. Dept., University of Louisville, Louisville, Ky.

RECENT LITERATURE

Reviews by Donald S. Farner and others

BANDING

1. Records of Recoveries in Belgium of Birds Banded in Other Countries. (Oiseaux bagués à l'étranger et retrouvés en Belgique.) Ch. Dupond. 1940. *Le Gerfaut*, 30(2): 81-86. Of particular interest among these records are those seven Starlings banded in the Baltic states and 17 banded in Germany and recovered in fall in Belgium and presumed to be in migration southward; there are single recoveries during the same season of birds from Denmark and Sweden. Winter recoveries in Belgium were made of seven Starlings banded in Germany and one each from Poland, Sweden, and the Netherlands; a Belgian Starling was recovered in winter in England.—D. S. FARNER.

2. Records of Recoveries in Belgium of Birds Banded in Other Countries. (Oiseaux bagués à l'étranger et retrouvés en Belgique.) Ch. Dupond. 1940. *Le Gerfaut*, 30(1): 30. Nine records (1938 and 1939) of birds banded in other countries and recovered in Belgium.—D. S. FARNER.

3. Records of Recoveries in Belgium of Birds Banded in Other Countries. (Oiseaux bagués à l'étranger et retrouvés en Belgique.) Ch. Dupond. 1940. *Le Gerfaut*, 30(3): 135-139. This is a list of 66 birds banded in other countries and recovered in Belgium as migrants or winter residents.—D. S. FARNER.

MIGRATION

4. Migratory Manifestations among the So-called Sedentary Birds. (Manifestations migratoires chez les oiseaux soi-disant sédentaires.) Herman Grote. 1940. *Le Gerfaut*, 30(1): 14-28. The author points out that the conventional designations of birds as "Migrateurs," "Sédentaires," and "Errants" is of little value since there are so many intermediate stages and since many species vary from year to year and from area to area. As evidence the author has compiled a series of notes made in southern Russia on the migration into the steppe country of birds ordinarily regarded in western Europe as non-migratory forest species. Among such species observed in the steppes in fall, winter, or spring are siskins, bullfinches, titmice, nuthatches, creepers, kinglets, several species of owls, several galliform species, and several species of woodpeckers.—D. S. FARNER.

5. Ornithological Observations Made in Belgium from May, 1940, to May, 1941. (Observations ornithologiques faites en Belgique de mai, 1940, à mai, 1941, et rassemblées par Ch. Dupond.) Edited by Ch. Dupond. 1941. *Le Gerfaut*, 31(2): 37-67. These are a remarkable group of observations when it is noted that most were made and recorded during the occupation period. Included are comparative notes on the anatid migrations of 1938-1939, 1939-1940, and 1940-1941; migration dates for the springs of 1940 and 1941 at Bomal-sur-Ourthe, Luxembourg; and a considerable series of brief notes by various observers on 22 migratory species and subspecies.—D. S. FARNER.

6. Ornithological Observations Made in Belgium from May, 1939, to May, 1940. (Observations ornithologiques faites en Belgique de mai, 1939, à mai, 1940, rassemblées par Ch. Dupond.) Edited by Ch. Dupond. 1940. *Le Gerfaut*, 30(2): 41-78. The winter of 1939-1940 was unusually severe with extensive mortality among smaller species, extraordinary numbers of diurnal birds of prey, and unusual influxes of more northern species. Because of these conditions this compilation made from the notes of several ornithologists is of particular interest.—D. S. FARNER.

POPULATION STUDIES

7. The Index of Heron Population, 1944. W. B. Alexander. 1945. *British Birds*, 38: 232-235.

This extremely valuable census of the nests in the heronries of England, Ireland, Scotland and Wales is now in its nineteenth year. It is pointed out that in any breeding season following a severe winter—one in which the mean temperature for a whole month is below freezing, so that ice prevents feeding in many waters—the index of breeding Herons shows a sharp decline from which recovery is not complete for two or three years. The author states, "If it is true (that Herons do not breed until two years of age), it seems necessary to suppose that the decrease in the breeding population after a severe winter is not due to mortality but to the fact that after the hardships which they have suffered in such winters many Herons are too enfeebled to breed in the following year."

The assumption that severe winter mortality should not be reflected until the second following nesting season implies differential destruction of juvenile birds. However, if all age classes were vulnerable in winter, any mortality would produce a drop in nesting birds the next spring. This is exactly what is shown by the index curve presented. In fact, if the drop in numbers of breeding birds is the result of *non-breeding* instead of *mortality*, as suggested by the author, we could expect almost complete recovery in the population in the second breeding season when the previously "enfeebled" birds are restored to vigor. However, examination of the curves shows that at least three years are required for the recovery

following a severe winter. This is exactly what would be the expected result of *mortality* in a species taking more than one year to reach sexual maturity.

In the data presented by Alexander there seems to be another interesting example (though unstated) of the concept of inversity recently expounded by Errington (see *Ecol. Monog.* 15: 1-34, 1945). If there is no increase in breeding population of Herons following five successive mild winters, low infant survival during this period is indicated; if the population builds back to nearly normal in only two to three years following reduction of 32% in population as a result of several severe winters—high infant survival is suggested during this period.—W. M. H. ELDER.

8. The Hawaiian Goose, Its Distribution and Reduction in Numbers. Paul H. Baldwin. 1945. *Condor*, 47(1): 27-37. A detailed survey of the past and present distribution of the Hawaiian Goose or Nene was made through studies of published records and through interviews with ranchers. The range of this interesting mountain inhabiting goose on the island of Hawaii has been reduced to slightly less than half of its former (18th century) extent. Birds may have occurred in the past on several other islands of the archipelago, but no specimens are available. Population reduction has been much greater than areal reduction. From a population of possibly 25,000 or more in the latter part of the 18th century the birds declined rapidly till 1900 and more slowly since that date to a low of about 50 individuals in the late 1920s. Agriculture (particularly cattle ranching), shooting and the introduction of the mongoose are considered important factors in this decline. Numbers have remained about the same during the past 15 or 20 years. One of the principal groups has been maintained in a semi-domesticated manner. Little hope is held that the species will survive the present development of the island.—J. T. EMLÉN.

CONSERVATION AND WILDLIFE MANAGEMENT

9. Live Trapping of Hawks and Owls. R. E. Stewart, J. B. Cope and C. S. Robbins. 1945. *Journal of Wildlife Management*, 9(2): 99-104. Drop traps, bow-net traps and pole traps of the padded steel and verball types captured 80 hawks (6 species) and 37 owls (5 species) in seven months of trapping on the 2680 acre Patuxent Research Refuge near Bowie, Maryland. Pole traps were most efficient, and the verball was favored over the padded steel trap because of less frequent injuries to captured birds. Photographs and drawings clearly show the construction and operation of the verball pole trap.—J. T. EMLÉN.

10. Relations of the American Coot with other Waterfowl. C. A. Sooter. 1945. *Journal of Wildlife Management*, 9 (2): 96-99. Coots have increased markedly in recent years and far outnumber ducks on many western areas. Observations on the relations of ducks and coots on the Malheur National Wildlife Refuge in Oregon suggested a competition for nesting sites and for feeding grounds which could conceivably affect duck reproduction.—J. T. EMLÉN.

11. Quadrat Inventory of Pheasant Trends in Oregon. Arthur S. Einarsen. *Journal of Wildlife Management*, 9(2): 121-131. Counts of pheasants flushed within 100 feet while walking the perimeter of selected quadrats one mile long and one quarter mile wide furnished the basis for inventory figures useful in comparing populations and tracing local population trends. Variables dependent on time of day, weather, season, the skill and alertness of the inventory taker and his ability to select representative quadrats were minimized by setting certain rules for the inventory taker and by making a considerable number of inventories in each area. A large number of sample quadrat inventories on an island with a known pheasant population showed a close agreement (about 10%) with the actual figure. The method is reported to be practical, economical and simple for laymen as well as trained game managers.—J. T. EMLÉN.

12. Age Determination in the Ring-necked Pheasant. Joseph P. Linduska. 1945. *Journal of Wildlife Management*, 9(2): 152-154. Adult and young pheasants taken during the hunting season (fall) can be separated with considerable ease and accuracy by testing the strength of the lower mandible and by measuring the leg spurs. Plumage characteristics are diagnostic in only a small proportion of the birds in late fall. The presence or absence of a bursa, as determined by probing, was used as the ultimate indicator of age.—J. T. EMLÉN.

PHYSIOLOGY

13. The Role of the Pituitary, Fat-Deposition, and Body Weight in Bird Migrations. A. Wolfson. 1945. *Condor*, 47(3): 95-127. In a series of well planned experiments (many of them previously reported) with migrant and non-migrant races of *Junco oreganus*, the author demonstrates that the internal factors initiating migratory behavior are not related to any particular condition of the gonads, but are associated with various physiological and morphological changes, notably a heavy deposition of fat and a concomitant increase in body weight. Large deposits of subcutaneous and intra-peritoneal fat appeared in all migrant juncos just preceding departure from the winter range whether these were free-living birds sampled from a local population, experimental birds brought to the migratory condition in mid-winter by artificial increase in day length or captive individuals detained on the winter range until mid-summer. By contrast, fat deposits did not form in the non-migratory *J. o. pinosus* in nature or in individuals subjected to increasing day-length experiments. An inherent difference in the response to an identical external factor (increasing day-length) is offered in explanation.

The pertinent literature on seasonal changes in body weight and fat deposition is reviewed and considerable substantiation is found for the contention that fat deposition is associated with the physiological preparation for migration. Contradictory conclusions drawn by Nice and by Kendeigh are attributed to incomplete analyses of records on partially migratory species.

Since the physiological preparation for migration appears to involve a number of metabolic changes, particular attention was directed to the pituitary gland, the master gland of the endocrine system. Cytological studies of the pituitaries of migrant and non-migrant juncos revealed an increase in secretory activity of all cell types during the period of gonad recrudescence and fat deposition. A number of pituitary hormone preparations were administered into migrant and non-migrant juncos. Gonadotropic hormone induced gonadial growth in all birds but failed to induce fat deposition. All preparations (all containing gonadotropin) affected the gonads, but only one, Antuitrin G (growth hormone plus small amounts of gonadotropic, thyrotropic and other hormones) induced a physiological state comparable to that which precedes migration. Unfortunately migration experiments with injected birds were not attempted, nor were observations made on migration restlessness as observed and described by Merkel and others. A thoughtful and thought-provoking paper.—J. T. EMLÉN.

14. Hybrid of a Siskin and a Domestic Canary with Three Legs. (Hybride de Tarin des aulnes x Canari domestique, monstre à trois pattes.) Ch. Dupond. 1940. *Le Gerfaut*, 30(1): 32. This interesting hybrid was hatched in May, 1939, and died in February, 1940. It had two normal legs and a third with bones only slightly shorter than those of the normal legs but with poorly developed musculature; the femur was plainly visible outside of the skin. The accessory leg assumed a transverse position on the venter posterior to the anus.—D. S. FARNER.

BEHAVIOR

15. Acquired Feeding-Habit of Black-headed Gull. H. G. Alexander. 1945. *British Birds*, 38: 198. A number of *Larus r. ridibundus* followed the daily steam-boat to Schouwen along a tidal channel where at low tide the suction of the boat caused a small patch of mud to be uncovered for a second or two, whereupon the birds plunged down to seize food, then "flew ahead again to repeat the process." "Such a capacity for what must, I think, be described as anticipatory action in coping with an irregular situation seemed . . . to indicate a surprising degree of mental elasticity."—M. M. NICE.

16. Swallows of First Brood Assisting Parents to Build Second Nest and Feed Second Brood. E. W. C. Jenner. 1945. *British Birds*, 38: 238-239. Three young *Hirundo r. rustica* of the first brood stayed with their parents and "all five worked in building a second nest, a few feet from the first. . . . The sitting bird was fed by several others, believed to number four. Three eggs were hatched, and the second brood was fed by several birds, believed to number five, until able to fly."—M. M. NICE.

17. The Role of Learning in the Feeding Behavior of Black-chinned Hummingbirds. Frank Bene. 1945. *Condor*, 47(1): 3-22. A scholarly contribution to the neglected field of learning in birds, based on observations and experiments with two dozen hummingbirds, young and old. The general motor patterns of feeding (probing and hovering) are exhibited as soon as the young hummers can fly. Leaves, twigs and obnoxious flowers are probed indiscriminately at first until associations have been formed with the more desirable food sources. Color vision and taste discrimination (but not smell) are well developed and aid in the formation of special feeding associations. Preference for any particular flower color is thought to be acquired individually by association and not inherited. The association of feeding with a particular location is quickly learned. Experiments with a "problem box" showed a poor ability to discover obscure approaches to a food source behind glass. Learning in these tests was strongly influenced by emotional disturbances.—J. T. EMLEN.

LIFE HISTORY

18. Life History of the Allied Woodhewer. Alexander F. Skutch. 1945. *Condor*, 47(3): 85-94. In another of his careful studies of neotropical birds the author describes the feeding, sleeping and nesting behavior of four pairs of the Allied Woodhewer (*Lepidocolaptes affinis*) in the highland forests of Guatemala and Costa Rica. The birds are insectivorous, foraging over tree trunks much after the manner of creepers (Certhiidae). They remain in pairs throughout the year and apparently maintain territories. Nests and sleeping quarters are located in natural cavities in trees. A single brood is raised between April and June. Two blunt white eggs are laid (2 nests) and incubated by both parents. The young are well feathered at two weeks and leave the nest at 19 days (2 nests).—J. T. EMLEN.

19. Ten Years' Observations on the Habits of the Coal Tit and the Blue Tit, *Parus major major* L. and *Parus caeruleus caeruleus* L., with Bird Boxes and Banding. (Dix années d'observations sur les mœurs de la Mésange charbonnière et de la Mésange bleue, *Parus major major* L. et *Parus caeruleus caeruleus* L., par les nichoirs et le baguage.) E. Delmée. 1940. *Le Gerfaut*, 30(3): 97-129 and 30(4): 169-187. This praiseworthy paper is derived from the observations of 89 broods of *Parus major major* and 21 broods of *Parus caeruleus caeruleus* and additional observations made both during the breeding season and during the winter for a period of ten years. In 16 cases in which individual

breeding *major* males were observed in two consecutive seasons the same box was used in only three instances; the same mate was retained only twice with the females undetermined in four instances. In eight similar records for *caeruleus* five returned to the box of the previous year; in one case the female and in four cases undetermined. In both species the male and female share in nest construction. Clutch size is variable; the normal size is eight or nine for *major* and nine or ten for *caeruleus*. The author's data do not support the assumption that clutch size decreases with the age of the female. In *major* intervals between the laying of individual eggs was found to vary from four days to less than one day. If the first clutch is destroyed a new nest is invariably constructed and a new clutch laid. The principal nest predators are *Passer domesticus* and *Passer montanus*. Normal second clutches were found to be produced by about 34 percent of the *major* pairs and 31 percent of the *caeruleus* pairs. There is frequently a change of mates for the second clutch. The number of eggs in the second clutch is usually smaller than the number in the first.

In both species incubation is apparently by the female only. The incubation period in *major* is 11½ days. Low temperature during the laying season is said to result in increased numbers of infertile eggs. The principal enemy of the nestlings is the doormouse. The largest number of young observed in a single nest was twelve (*caeruleus*). After leaving the nest the young tits remain in family groups spending the nights in trees. "We are firmly convinced that the young are dispersed in the region but at a distance such that they return only accidentally to the vicinity of the birthplace." This based on a three percent return of 620 birds banded as young. After departure from the nest the young wander throughout the region until the time in winter at which they fix themselves to definite limited individual territories each with a centrally located shelter cavity in which the night is spent. Usually these territories are less than ten kilometers from the birthplace. Periodic observations of boxes from October through March revealed a strong tendency for individual birds to occupy the same boxes nightly for considerable periods of time although frequent changes were made by some individuals. No box was ever found to contain more than one bird at the same time. That considerable movement occurs in fall and winter is emphasized by the fact that 85.7 percent of the winter population consisted of unbanded birds despite the fact that all breeding birds and all young in the area had been banded during the previous nested seasons. (The spring populations had only 41 percent unbanded birds.)

Banding data show that there are some "foreign birds" among the winter populations of both species; these are from the Netherlands and Germany. It is thought that the percentage of migratory birds among tits nesting in Belgium is probably much smaller than that among the more northern populations. It was concluded from the banding data that the average tit does not live more than two years.—D. S. FARNER.

20. A Nesting Season with a Pair of Honey Buzzards, *Pernis apivorus* (L.). (Une saison de nidification avec un couple de Bondrees apivores. *Pernis apivorus* (L.)). Florent Wortelaers. 1940. *Le Gerfaut*, 30(1): 1-14. Observations on the activities of a nesting pair from the latter part of the incubation period until the adults and young departed from the vicinity of the nest in September.—D. S. FARNER.

21. Some Observations Made During the Nesting Season of 1939. (Quelques observations faites au cours de la saison de nidification 1939.) J. De Maerschalcck. 1940. *Le Gerfaut*, 30(2): 78-81. Observations on nine nesting species. Of particular interest is the fact that no nests of the Kingfisher, *Alcedo atthis ispida* L., were found. This is attributed to losses which occurred during the previous winter in Belgium.—D. S. FARNER.

ECOLOGY

22. Hunger at the Peace Table. Wm. Vogt. 1945. *Saturday Evening Post*, (May 12), 217 (46): 17, 109-110. A most impressive picture of the mounting human populations and concomitant abuse of the land. "Vast tracts of once productive land are now, in the most literal sense of the word, deserts." Both rodents and birds are indispensable components of healthy land. "It is inconceivable that a stable and durable peace can be achieved as long as man ignores the basic facts of his own biology."—M. M. NICE.

HEREDITY, VARIATION, EVOLUTION

23. The Galapagos Finches (Geospizinae), a Study in Variation. David Lack. 1945. *Occasional Papers of the California Academy of Sciences*. No. XXI. 160 pp. \$2.50. The Geospizinae are a subfamily of Fringillidae endemic to the Galapagos Islands (five genera and twelve species) and Cocos Island (one genus and one species). Because of its peculiar insular distribution and variation this group has been the subject of several treatises on evolution and zoogeography. This monograph is primarily the result of an expedition to the Galapagos Islands from mid-December, 1938, to early April, 1939, and an examination of the available geospizid skins in various museum collections. The systematic treatment adopted is based largely on that of Swarth (1931) although the populations of some of the islands have been reassigned. In addition *Cactornis brevirostris* Ridgway, *Camarhynchus aureus* Swarth, *Camarhynchus conjunctus* Swarth, and *Cactospiza giffordi* Swarth are not considered as valid species but are regarded rather as "merely variants or possibly hybrids, not assignable to any known species." Consequently five genera, twelve species, and 22 subspecies are retained as valid; no new forms are described. Table 16 (p. 112) in listing 85 specimens of questionable identity indicates the taxonomic difficulties encountered in this group. James, Indefatigable, and Albemarle (including Narborough) islands have the largest number of species, ten each; Culpepper and Wenman islands have the smallest number, three each. Chatham has the largest number of endemic forms, three plus one partial differentiation; several islands have no endemic forms.

Biological observations, although interesting and an invaluable record, contribute only in a limited way to the understanding of the group. "Pair-formation in the Geospizinae follows the typical pattern in territorial songbirds. Postures are extremely generalized, similar in all species, and similar for aggression, sexual behavior, and food-begging by the young. Nest-building and nest-visiting are prominent in the sexual display, and one species frequently utilizes the nest of another. Courtship also includes sexual flights and male feeding female. Only the female incubates, the male feeding her near the nest. Both sexes feed the young in the nest, but only the male feeds the fledglings. The songs are generalized, and the songs of the different species overlap." Experiments with mounted birds and other observations indicate a certain amount of sexual discrimination by plumage and some specific differentiation by bill. The latter is of interest in view of the fact that size and shape of the bill are the important criteria in separating several of the species. "Breeding habits have been far more conservative than food habits in the evolution of the Geospizinae. . . . Provided *Cactospiza* is grouped with *Camarhynchus*, the main genera of Geospizinae have different feeding habits. The species within genera feed largely on similar foods, *Geospiza scandens* being a partial exception. The nests of all species are similar with the exception of *Geospiza* which nest in *Opuntia* plants. In all species most of the breeding occurs during the rainy season.

Of particular interest is the phylogenetic loss of black plumage in the adult males. The adult males of *Geospiza* are black although males have been frequently

observed to breed in immature plumage. The fully adult plumages in *Platyspiza* and *Camarhynchus* correspond to a transitional stage in *Geospiza*; in *Cactospiza* the black has disappeared entirely. In *Platyspiza* and *Camarhynchus* the black seems to be disappearing at different rates on different islands.

"Differences between island forms of the same species are considered non-adaptive, and due primarily to the 'Sewall Wright Effect' while colonization by an atypical sample may be a subsidiary factor." It is difficult to estimate the importance of the latter suggestion; it may be far more important than the author assumes. Furthermore it seems not impossible that through the multiple effects and interactions of the genes that produce the so-called non-adaptive changes may produce physiologic changes which have a selective value; should this be the case, the evolution is adaptive. "The island populations of each species are often slightly differentiated by mensural characters, although often not sufficient to justify subspecific recognition. Each island population seems to have evolved independently, with periodic disturbances through inter-island wandering, which appears to be uncommon." Correlation of bill and wing, and length of culmen with depth of bill is high in most species but may be absent in a few. "Most species of Geospizinae are not abnormally variable, but a few are. *Geospiza conirostris darwini* of Culpepper is thought to be of hybrid origin." In general, however, hybridization is not considered an important factor in the evolution of the Geospizinae. The author is to be commended on the precise analytic methods employed, including the use of standard deviation and coefficient of correlation instead of the traditional but mathematically inadequate expression of means and extremes.

In most insular groups there is but a single form per island; the condition involving many forms per island, as in the Geospizinae, is uncommon among birds. A similar, although more extreme, example is that of the Drepanididae of Hawaii in which the principles involved are the same but in which the evolution has proceeded much further. In the case of the Geospizinae the author concludes that evolution has proceeded by no unusual processes and that the following factors were of importance in causing the present peculiar zoogeography: (1) The extreme isolation of the archipelago although some of the islands may have been connected with each other at one time. (2) The ancestral Geospizinae must have arrived at a very early time and unaccompanied by other birds, thereby creating a situation without food competitors or predators. (3) The partial but not complete isolation of the islands within the archipelago. Despite the difficulties and pressures under which this monograph was prepared and produced it is an important contribution to ornithology and zoology; it should be read by all interested in zoogeography, evolution, and avian systematics.—D. S. FARNER.

GEOGRAPHIC DISTRIBUTION

24. The Birds of the Forest Region of Pallavicini, Northwest of Mount Bükk, Hungary. (Les oiseaux du domaine forestier Pallavicini, N. W. du mont Bükk (Hongrie)). Claude Thibaut de Maisières. 1940-1941. *Le Gerfaut*, 30(3): 130-135, 30(4): 187-203, and 31(1): 1-22. This paper is the record of the ornithological observations made by the author in this region from October, 1938, to July, 1939. There is an annotated list of 89 species.—D. S. FARNER.

25. Some Interesting Ornithological Discoveries in Eastern Siberia. (Quelques trouvailles intéressantes en la Sibérie orientale.) W.-N. Scanlon. 1941. *Le Gerfaut*, 31(2): 67-73. These are some observations, mostly systematic and zoogeographic, made by the author on the avifauna of Eastern Siberia in the course of two years' study of the fauna of this region. The notes deal with sixteen species.—D. S. FARNER.

BOOKS AND MONOGRAPHS

26. Trampling Out the Vintage. Joseph A. Cocannouer. 1945. Univ. of Oklahoma Press, Norman, Okla. 221 pp. \$2.75. An apostle of good farming practices in Oklahoma, California, and the Philippines, the author drives home the truth that "A nation is only as strong as its soil."—M. M. NICE.

27. Conservation of Renewable Natural Resources: Some Fundamental Aspects of the Problem. Raphael Zon, William S. Cooper, Homer L. Schantz, A. E. Douglass, Charles G. Abbot, Paul B. Sears, Ellsworth Huntington, Morris L. Cooke, Samuel T. Dana, Milton S. Eisenhower, Julian F. McGowin. 1941. Univ. Pennsylvania Press. Phila. 200 pp. \$2.50. This important volume treats of three chief topics: The Natural Vegetation of the United States as a Guide to Current Agricultural and Forestry Practice, Climatic Cycles in Relation to the Theory and Practice of Conservation, The Administrative Task of Conservation—Private and Public. Mr. Zon in "Natural Vegetation as a Key to Conservation Practices" points out that "our early land settlement, far from being guided by natural vegetation, took place, as we now know, against all indications of nature." Mr. Cooper in "Man's Use and Abuse of Native Vegetation: the Lessons of the Past and the Prospects for the Future" makes the following pregnant statement: "that man school himself to realize that after all he is but a single species of animal, albeit an important one, involved with all other organisms, both plants and animals, in a complex web of community relations, where man is far more dependent upon his fellows than they are upon him." In Mr. Schantz' "The Original Grassland and Desert Shrub Vegetation of the United States as a Guide to Present Day Agricultural Practice," we learn that "It seems probable on a world basis wild lands will always exceed cultivated lands." "Erosion should be avoided entirely by maintaining the plant cover intact."

The most valuable and impressive chapters on conservation are the four in the first section, and also Mr. Sears' "Conservation and the Changing Environment" in which is shown how the white man in the United States has changed forest into savannah, savannah into prairie, prairie into plains, plains into desert. "Along with this visible change in the structure of vegetation has come a serious decrease in the effectiveness of precipitation." The last four chapters emphasize the seriousness of the situation and propose remedial measures. The volume is a very instructive and impressive document, one that should be read by all people concerned with the future of the land and its life.—M. M. NICE.

28. The Nature of the Beast. A Popular Account of Animal Psychology from the Point of View of a Naturalist. Ruth Crosby Noble. 1945. Doubleday, Doran. N. Y. 224 pp. \$2.75. This interesting book is "based largely on the scientific publications, lectures, and notes of the late G. Kingsley Noble, Ph.D., of the American Museum of Natural History." Some of the subjects discussed in the seventeen chapters are: World of Sensation, Creatures of Instinct, Animals Can Learn, Emotions, Societies, Social Rank, Territory, Sex Recognition, Courtship, Parenthood, Hormones and Behavior. The many examples drawn from reptiles, amphibia, and mammals will be especially instructive to ornithologists. Occasionally the author seems a little careless in her statements and insufficiently critical of her sources. The value of the book would have been much increased if better documented; instead of 102 references, there should have been three or four hundred. There are eight well-chosen plates and an index.—M. M. NICE.

29. A Check-List of West Virginia Birds. Maurice Brooks with foreword by George Miksch Sutton. 1944. Bulletin no. 316, Agricultural Experiment Station, W. Va. University. pp. [i-iii] + 56. During the ten years that have elapsed since the last list of West Virginia birds made its appearance so much

intense ornithological activity has taken place that the time seemed to be ripe for a new and up-to-date check list of the species and races of birds now known to occur in West Virginia, together with their seasonal distribution and breeding status.

Maurice Brooks is amply qualified to prepare such a list; his wide first-hand acquaintance with the state's climate, geography and geology, as well as his zoological and botanical knowledge, make him the logical man to write this new list. The reviewer's chief criticism is that it is too short! The account of location, topography and drainage, climate and rainfall, forests, life zones, previous ornithological work and bibliography of the more important papers relating to West Virginia birds is condensed to six pages. It is stated that the list follows the order and nomenclature of the forthcoming 5th edition of the American Ornithologists' Union in so far as such changes and additions as have been authorized by the nineteenth supplement; however, *Dendroica potomac* is accorded a numbered place on the list although it has not been recognized by the A.O.U. Check-List Committee, nor has the committee accepted Griscom's proposed changes in the nomenclature of the Sitka Crossbill and Eastern Red Crossbill; nevertheless the changes have been made here.

A total of 311 forms is now definitely recorded from West Virginia (the last West Virginia list enumerated 266 forms) with a hypothetical list of nine more. The statement under each form consists of a few lines outlining its status and distribution in the state. In the case of the common species, habitat preferences are recorded, while in the case of rare or accidental visitors, definite records are cited and the location of the specimen given.—J. L. PETERS.

30. The Ecology of the Prairie Chicken in Missouri. Charles W. Schwartz. 1945. University of Missouri Studies. Vol. 28 (1), 99 pp. 32 photos, 8 maps. University of Missouri, Columbia. \$1.50. The study on which this report is based was commenced in July, 1940, when the author was first employed by the Conservation Commission as one of the project leaders of the Federal Aid-Wildlife Program, and continued into 1944. Formerly the Prairie Chicken (*Tympanuchus cupido americanus* (Reichenbach)) occurred in every prairie county in Missouri, but now occupies only about 2500 square miles. According to the maps, the major Prairie Chicken ranges are in the northern part of the state, north of the Missouri River and east of 93° meridian, and in the southwestern part north and west of the Ozark Plateau. In 1907 it was estimated that the population was about 12,500 birds, which had shrunk to 5110 birds by 1934; in 1941 and 1942 the population had increased to 13,000, but this figure was reduced to 12,153 in 1943 and to 9250 in 1944. Two methods of conducting the census were employed: the "farmer interview" method and the booming ground census. Chapters are devoted to courtship display and mating, nesting and roosting, food habits, soil and vegetation preferences, mortality factors, and management.

The author concludes that legal protection should be continued since there is no surplus of birds; he also recommends that the annual booming ground census be continued, suggests practices for the improvement of range and provision for permanent supplies of water; on the other hand, he does not recommend, under present conditions, disease, parasite or predator control or special provision for winter food.—J. L. PETERS.

30. Modern Bird Study. Ludlow Griscom. 1945. Harvard University Press, pp. x—190, 15 pls., 10 maps and diagrams. \$2.50. In the preface to this little book, based on a series of Lowell Institute lectures, the author states that ornithology has become so large a subject that its various parts have grown apart as specialties each with its own techniques and its own votaries. The choice of what to include and what to omit in a popular book of this sort is a matter on

which no two authors would wholly agree, and is therefore not a matter for criticism. Each reader of the book may find some things presented less fully than he would like, and may also find other topics possibly given greater treatment than his personal interest would ask. Griscom's special field has been the distribution and variation of birds, chiefly of the western hemisphere, and he states from the start that he is omitting discussion of anatomy, physiology, banding and life history and experimental behavioristic studies. In this he is within his rights, but the title of the book is made misleading by this omission, as "modern" bird study has made its greatest advances in these fields. The word "modern" is one the reviewer dislikes as it usually implies "improvement" while the really important differences between bird study today and yesterday is that we have more recorded information today and are sometimes able to word our questions a little more exactly and explicitly than we could yesterday. In his special field of distribution, Griscom's contribution to the techniques of accumulating data has been one of increasingly fine discrimination of field characters by which the experienced observer is enabled to make more complete "counts" of local avifaunal conditions. The intense application needed for the development of this technique is, however, not also conducive to intimate study of habits other than those peculiarities of locomotion, sound, or posture that lend themselves as field characters for specific identification, and this lack of continued study of the details of the habits and reactions of birds is unfortunately reflected in some of the statements in the two chapters dealing with "Capacity and Intelligence of Birds" and "Adaptability of Birds." These two chapters are hardly "modern" in their presentation of their subject matter. To take a few cases in point—on page 35 the yellow warbler is credited with recognizing a cowbird egg for what it is and then disposing of it by building a new nest over it, thereby burying it in the wall of the nest. Nothing is said to the effect that the reaction is the same to an acorn or any other object of peculiar size that the warbler is unable to remove. It is not a case of recognition of a specific, potentially dangerous object to be gotten rid of, but merely of a foreign element in the nest. I am afraid that Griscom's query as to whether those red-eyed vireos that also bury the cowbird egg in the wall of the nest were individuals that had been parasitized by the cowbird in a preceding year is one that would not have been raised had he considered all the facts.

Again, on page 37 the fact that the brown pelicans on Pelican Island deserted the island when the Audubon Society put up a big sign on it stating that the birds there were under protection, is used as a demonstration of the lack of intelligence of the birds. The pelicans, naturally wary birds, reacted in a normal way to a sudden change in their accustomed environment; the lack of intelligence was on the part of the Audubon Society, who should have known better; or are we to infer that they thought the pelicans could read?

Griscom's general conception of "adaptability" is different from what most authors imply. Specializations in form, function, or habit, are usually looked upon as end results of adaptive evolution, but here we are confronted with the attitude that adaptability is a measure of the degree to which a specialized (hence phylogenetically adapted) species can temporarily undo its adaptation.

In the chapter on "Migration: Causes and Origin" no mention is made of one of the basic factors, first brought out by the late H. Elliot Howard, namely, that the change from gregariousness to territorial solitude is the basis for the "spreading out" in the spring, and that this is not dissimilar to simple migration (without, of course, the enormous geographic gap between summer and winter ranges found in many migrants).

The four chapters on Distribution (General; South America; Central America; and North America) are obviously the ones closest to the author's interests and are also based on more completely integrated factual surveys, and are the most satisfactory ones in the book. The statements to which exception might be made

(such as, for example, on page 153 where the family Gaviidae is considered peculiar to the arctic realm) are largely to be explained on the basis of the popular, informal, conversational style of the presentation, intended for a general, lay audience. This also is true for the final chapter, dealing with "Classification and the Species Concept."

A good index completes the volume, which should prove informative to a wide circle of readers.—HERBERT FRIEDMANN.

NUMBER OF BIRDS BANDED DURING THE GOVERNMENT FISCAL YEAR 1944

The Fish and Wildlife Service has compiled the following report of the individual and cooperative banding stations that banded over 100 birds during the fiscal year July 1, 1943, to June 30, 1944.

The following stations on Federal Refuges banded more than 100 birds each:

Chautauqua National Wildlife Refuge, Havana, Ill.	7,235
H. L. Bradley.	
Illinois Natural History Survey.	
Patuxent Research Refuge, Bowie, Md.	5,405
R. E. Stewart, C. S. Robbins, J. W. Brainerd, J. B. Cope, and R. B. Nestler.	
Piedmont National Wildlife Refuge, Round Oak, Ga.	3,403
R. J. Fleetwood.	
Salt Plains National Wildlife Refuge, Jet, Okla.	669
Seth H. Low.	
Bear River Migratory Bird Refuge, Brigham, Utah	531
V. T. Wilson and C. S. Williams.	
Bowdoin National Wildlife Refuge, Malta, Mont.	434
V. Ekedahl.	
Ninepipe National Wildlife Refuge, Moiese, Mont.	393
L. C. Snyder.	
Des Lacs National Wildlife Refuge, Kenmare, N. Dak.	286
C. M. Dinkins.	
Wheeler National Wildlife Refuge, Decatur, Ala.	268
C. R. Markley.	
Blackwater National Wildlife Refuge, Cambridge, Md.	195
L. M. Llewellyn.	
Cape Romain National Wildlife Refuge, McClellanville, S. C.	145
Wm. P. Baldwin, Jr., and J. D. Eadie.	
Tule Lake National Wildlife Refuge, Tulelake, Calif.	138
Archie V. Hull.	
Back Bay National Wildlife Refuge, Pungo, Va.	103
J. E. Perkins.	

The following cooperators banded more than 5,000 birds:

Dr. O. L. Austin, North Eastham, Mass.	9,975
John Jedlicka, Orland Park, Ill.	5,971
Alfred H. Reuss, Jr.	5,859