

because of the possibility that its spread is promoted by the gathering of considerable numbers of birds to feed in a small area, as in most winter banding in the northern states. Apart from natural distaste for having the banding station bring about extensive injuries, the condition interferes with the normal movement of birds and reduces the chance of worthwhile return and recovery records. The worst outbreak at our station came in March, 1950, at the sites used since fall, and involved largely Tree Sparrows, *Spizella arborea*, which had been in the vicinity for months and repeated in the traps up to 50 or 100 times.

While field observation can produce only part of the data needed for more thorough knowledge, it can contribute a great deal, and banders are urged to keep notes at their own stations, sending summaries to me occasionally. What species does foot pox occur in? How many individuals and what proportion of each species were observed to be affected? Does it seem to occur in warm weather or cold, dry or wet, or is there no apparent difference? What proportion of the affected individuals lost toes, and how many? Did any home remedy such as the application of alcohol or iodine to the affected parts seem to be helpful? Did the condition occur among birds concentrated on limited trap sites? If so, did it appear to be feasible to decontaminate the sites (and traps and gathering cages) by boiling water or some disinfectant? If not, was a change of trap site effective? Some of these questions may prove not to be pertinent when more is known about foot pox, but it is likely to be some time before the gaps in our knowledge of it are closed.—E. Alexander Bergstrom.

## RECENT LITERATURE

### BANDING

(See also Numbers 12, 43.)

**1. What Tag Recoveries Show about the Home Range of Blackgame and Capercaillie.** (Mitä Merkitsemistulokset Osoittavat Metsälintujemme Asuinalueen Laajuudesta.) Jukka Koskimies. 1951 (1952). *Suomen Riista* (Helsinki) 6: 155-156 (English summary p. 194). Reports six recoveries of Blackgame and five of Capercaillie tagged with the wing mark of the Finnish Game Foundation. Of the Blackgame two were taken where marked, the other four were shot 9, 10, 12, and 23 km. respectively from the marking place. One Capercaillie was retaken where marked, the others 10, 10, 16, and 23 km. distant respectively. "It has been generally recognized that blackgame and capercaillie at least occasionally perform even considerable movements. The tag recoveries seem to indicate that even under quite normal conditions the home range of these birds is remarkably wide."—O. L. Austin, Jr.

**2. British Trust for Ornithology, Eighteenth Annual Report (1951).** 40 pp., 1 fig., 1s 6d. Oxford, 1952. While the results of the work of the Trust include a number of original papers each year in journals like *British Birds*, the annual report covers a wide variety of research projects for which detailed reports are not ready. The Trust has made excellent use of the efforts of widely scattered observers. In all too many instances local bird clubs in the United States and Canada offer little constructive outlet for the activities of those of their members who have reached the point of recognizing almost all local species at first sight. At the same time extensive data on most field problems remain hard to gather. It is gratifying to note the "great expansion and progress for the British Bird Observatories" in 1951, as most of these combine the reception of a large number of visitors with extensive and productive banding operations. The Trust's bird-ringing scheme set a new record in birds ringed (85,743) and passed the mark of a million ringed. A Manx Shearwater ringed at Skokholm in Pembrokeshire on Sept. 10, 1951, and recovered at Rio de Janeiro, Brazil, on November 20 is the first British ringed bird recovered from South America. Another transatlantic Kittiwake recovery is represented by a bird ringed at Lundy in Devon on July 10, 1950, and reported at Notre Dame Bay, Newfoundland, on November 5, 1951.—E. Alexander Bergstrom.

## MIGRATION

(See also Number 2.)

**3. Avian Migration and Migration Research** (Vogelzug und Vogelzugforschung). Joachim Steinbacher, 1951. Verlag Waldemar Kramer in Frankfurt am Main. 184 pp. Popular and professional interest in the problems of avian migration has been growing rapidly during the last few decades. In recognition of this interest the author has reviewed the progress made in the study of migration during the years preceding 1949.

The book is divided into four sections. In the first introductory section the scope of the subject to be treated is outlined by expanding the following questions:

1. What do we know about avian migration?
2. How do we recognize it?
3. Where do we find it?
4. How did it originate?

The second section describes the more important methods employed in migration research. Banding techniques are treated rather generally with no mention of trap design or similar details. As a minor point of interest, the close control over banding exercised by the German Vogelwarte is in marked contrast to the rather indiscriminate banding practices carried out in the United States. The newer methods for physiological research are also described in general terms.

The third, and largest (102 pp.) section is devoted to a discussion of the results of the application of these methods. It is divided into eleven subsections as follows:

1. Objectives of migration—a discussion of winter ranges
2. Migration direction
3. Migration path
4. The nature of migration
5. The time of migration
6. The velocity of migration
7. The height of migration
8. Migratory performance as a physiological problem
9. Migration and the weather
10. Orientation
11. The causes of migration

The subject of each subsection is treated historically with the contributions of early investigators given in chronological order. All of the important theoretical explanations are discussed critically and the unsolved problems are described. The outlook is broad, covering avian families throughout the world and the contributions of biologists from many countries.

In the final section, an appendix, detailed migration data are presented for six European species of birds. One hundred and twenty references are listed in the bibliography.

Many of the illustrations are extremely difficult to interpret, either because too many data are presented on a single chart or because of a lack of sufficient descriptive information. Since they are derived from other writers' papers the fault is not the author's but is one common to many scientific papers.

This book is a scholarly summary of our knowledge of avian migration. No important omissions are noted, although mention might have been made of the suggestion that Coriolis forces could be utilized by birds for orientation purposes. It deserves a place in the library of all serious ornithologists.

In this reviewer's opinion the book constitutes an impressive indictment of a current tendency in biological science to generalize from insufficient data. Although the author does not comment on this, he does time after time describe a theory and then from his broader perspective cite so many exceptions that one is tempted to wonder why the original writer proposed the theory in the first place. Perhaps more recognition for the patient collector of reliable experimental data would restore a sensible balance.—R. O. Bender.

**4. Migration of the Mistle Thrush and Details of its Reproduction.** (Migration de *Turdus viscivorus* et particularités de sa reproduction.) Noël Mayaud. 1952. *Alauda*, 20(1): 31-38. Many Mistle Thrushes winter in France.

"Ringed birds abroad come from Germany (N. W. for the most part), Holland and Belgium, a few birds from Scotland, England and Sweden." Often Mistle Thrushes and Chaffinches, *Fringilla coelebs*, nest in the same tree. It is suggested that this association is mutually helpful, for the vigilance of the Chaffinch discovers the enemy and the aggressiveness of the thrush routs him.—M. M. Nice.

**5. Fair Isle Bird Observatory Trust, Annual Report 1951**, Edited by Kenneth Williamson. Edinburgh, spring 1952. This was the fourth season for the observatory, the northernmost of those coordinated by the British Trust for Ornithology, and the most strategically located for migrants. In this period, 6,390 birds of an even hundred species were ringed at Fair Isle, and extensive data recorded on ectoparasites, plumages and weights. The observatory is well placed to record loss of weight during overseas migration and gain in weight after a migrant arrives. It is beginning to be possible to use this knowledge with knowledge of weather, wing measurements and degree of infestation by ectoparasites to arrive at the origin of migrants. The work carried on by the Fair Isle Trust shows increasing results year by year.—E. Alexander Bergstrom.

### FOOD HABITS

(See Numbers 6, 20, 35, 51.)

### NIDIFICATION AND REPRODUCTION

(See also Numbers 4, 23, 24, 25, 27, 28, 30, 31, 39, 41, 46, 57.)

**6. A Study of Screech Owls in Southern Ontario.** R. F. James and N. D. Martin. 1950. *The Canadian Field-Naturalist*, 64(5): 177-180. More than a thousand nail kegs were converted into roosting houses for Screech Owls, *Otus asio*, and placed in trees, usually at a height of 15 feet, mainly in York County, Ontario. Uneaten parts of animals brought to these barrels by the owls as food were collected and identified. Four species of mammals, 14 of birds, two of small fishes, and one crayfish were identified. Quantitative data are not given. A list of animals other than Screech Owls occupying the barrels is included.—W. Earl Godfrey.

**7. Breeding Behavior of the Brewer Blackbird.** Laidlaw Williams. 1952. *The Condor*, 54(1): 3-47. The breeding behavior of a colony of Brewer Blackbirds, *Euphagus cyanocephalus*, was studied at Carmel, Monterey County, California, where the species apparently is resident, from 1942 to 1947. Five phases of the breeding cycle are discussed: (1) segregation from the flock and assortment into pairs; (2) nest-building, copulation, and egg-laying; (3) incubation; (4) nestling care; (5) fledgling care.

Total adult populations varied from 27 in 1943 to 68 in 1946. The total number of color-banded birds breeding in the colony over the six years was 117, of which 47 were males and 70 were females. Another eight of each sex could not be caught for banding. Numbers of males to females varied from 13:14 in 1943 to 18:36 in 1947.

In all there were 80 cases of monogamy and 35 cases of polygyny. Polygynous matings, although present every year, increased greatly in 1947 when some males had three mates and one male had four mates. Of the 70 "primary" pairings, both members of the pair returned the following year in 45 cases and remated in 42 of these cases. The nests of polygynous males were interspersed among those of other males. Males were more aggressive in guarding their mates (primary, and secondary if any) than their nests. Females were often more belligerent than males in guarding actual nest sites. Only the females incubated the eggs. Polygynous males usually assisted their primary mates in feeding nestlings and more often than not also assisted secondary mates in feeding their nestlings. Polygynous males feeding at two nests were not known to exceed the rate of feeding (about 14 trips per hour) of males feeding at only one nest. Although fewer broods per male were fledged in monogamy than in polygyny, the proportion of fledged broods to nests containing young was higher in monogamy. This paper is a substantial

contribution to our knowledge of the highly variable breeding behavior of icterine birds.—L. R. Mewaldt.

**8. The Influence of the Weather on Nesting in 1949.** (Der Einfluss der Witterung auf den Brutverlauf 1949.) Gerhard Creutz. 1951. *Beiträge zur Vogelkunde*, 2: 1-14. Warm weather in April and May 1949 in Pillnitz, Germany, brought very early nesting with Starlings, *Sturnus vulgaris*; Tree Sparrows, *Passer montanus*; Great and Blue Tits, *Parus major* and *caeruleus*; Redstarts, *Phoenicurus phoenicurus* and Pied Flycatchers, *Muscicapa hypoleuca*. From early June to mid-July the weather was cold with three times the normal amount of rainfall. Young of the last two species fledged during the bad weather and most of them perished. Second broods were not attempted except for a few late in the season. Late nesting species, Spotted Flycatchers, *Muscicapa striata*; Barn Swallows, *Hirundo rustica* and House Martins, *Delichon urbica* suffered heavy losses with their first broods but succeeded better with their second attempts. With the Pied Flycatcher 1,141 young were fledged from 1,691 eggs in 277 nestings—67.5 percent from 1933-48. In 1949 from 547 eggs in 81 nestings of the normal brood 443 young were fledged—80.9 percent, a typical figure for a favorable season. From 42 eggs in 8 nestings of the late brood 15 young were fledged—35.7 percent. The average date of hatching for the first brood was May 22, for the second June 12; the first brood suffered after leaving the nest, the other both before and after. In the spotted Flycatcher from 84 eggs in 19 nestings in the first brood hatching in June 1949, 40 young were fledged—47.6 percent. From 36 eggs in 10 nests of the second brood, hatching in July, 26 or 72.2 percent were fledged. In 1950 the number of breeding pairs of Pied Flycatchers was down 25 percent, those of the Spotted Flycatcher, 60 percent. Most of the losses must have come after fledging.—M. M. Nice.

**9. Data on the Excavation of Nest Hole and Feeding of the Young of Green Woodpecker (*Picus viridis*).** H. R. Tutt. 1951. Proceedings of the Xth International Ornithological Congress, Uppsala: 555-562. Detailed observations on the excavation of the nest hole, starting in November in Essex, England; most of the boring was done in April and early May. Six timed periods of work of the female lasted from 24 to 61 minutes, averaging 41; 6 periods of the male lasted from 26 to 67 minutes, averaging 50 minutes. Photographs illustrate the positions of the birds when excavating and when feeding young.—M. M. Nice.

**10. Breeding Biology of the Spotted Flycatcher.** D. Summers-Smith. 1952. *British Birds*, 45(5): 153-167. Another fine paper from the British Trust for Ornithology, based largely on the Nest Records Scheme begun in 1939. Data on 548 nests of *Muscicapa striata* are analyzed, comparisons being made between different parts of Great Britain. "The average clutch size decreases from about 4.5 eggs at the end of May to less than 3 eggs by the end of July." The average clutch size in southern England and Wales is about 4.2, in Northern England and Scotland 4.4. Probably only about 20 percent of the pairs are double-brooded. "It is probable that the Spotted Flycatcher can only successfully rear a brood of five young in Britain when the conditions are very favourable." Incubation averaged 13.2 days, fledging 13.4 days. "Complete data are available for 267 clutches and 197 broods; 819 eggs hatched out of 1,052 laid, and from 749 eggs that hatched 609 young flew." (p. 159.) The over-all success was high—63 percent. These birds build in protected sites—against walls, in holes in trees, in ivy, occasionally in nest boxes or in old nests of other species. Their nesting success approximates the 66 percent average of hole nesters, rather than the 45 percent of many open nesters.—M. M. Nice.

**11. The Nesting of a Pair of Blue Tits.** G. A. and M. A. Arnold. 1952. *British Birds*, 45(5): 175-180. Very interesting record of a nesting of a pair of color-ringed *Parus caeruleus* in a garden in Warwickshire. Twelve eggs were laid between May 12 and 23. While incubating, the female averaged 59 minutes on the nest in 58 periods, and 7.5 minutes off the nest in 81 periods. Feeding was watched during 183 half hours in the 19 days the young were in the nest; it averaged about 12.5 times per half hour from 9:00 to 17:00 and about 16.6 between 17:00 and 21:00. The male did most of the feeding for the first five days, for the

next six the parents shared duties equally, but then the female disappeared and the male carried on alone. For five days he fed as often as the two had done. "On the 14th day the male averaged 37 visits per hour, this figure being concluded from 11 counts. With his active day at 15½ hours—4:30-20:00 B.S.T.—he alone performed between 550 and 600 visits to the nest with food." His highest rate was on the 13th day when he carried bread crumbs to the nest 49 times in a half hour; this was directly after a heavy rain shower. On the 18th day his rate suddenly dropped from an average of 35 to 20 an hour and on the 19th to 10, which suggests "he was exerting himself to a capacity which he could not maintain." One of the ten young was found dead after the others had flown. "To induce the young to leave the nest the male called with food at a distance of 10 or 20 yards, and eight young emerged from 15:30 to 16:10, each flying 5-15 yards to the ground amongst low but thick vegetation. Within an hour a very heavy thunderstorm began, and with little abatement lasted into the night." Mortality was probably high and only one young was seen later with its father.

This is a remarkable picture of instinctive behavior—the extraordinary effort in response to the nestlings' need for food and the entire lack of judgment in calling out the brood in the face of the impending storm. What releases this enticing on the part of the parent? It cannot be common with passerines. I have seen it only twice, once with Black-throated Green Warbler, *Dendroica virens* (*Bird-Banding*, 3: 99-100. 1932), and once with Carolina Wren, *Thryothorus ludovicianus* (*Wilson Bulletin*, 60: 151. 1948). Althea Sherman never saw it in her 25 years of watching birds' nests (*Birds of an Iowa Dooryard*, 1952: 111). In 1943 (*Transactions Linnaean Society of New York*, VI: 245-246) I cited all the instances I had found in the literature of parents calling young from the nests; there were reports for seven passerine species, for the Wryneck, *Jynx torquilla*, and Bald Eagle, *Haliaeetus leucocephalus*.—M. M. Nice.

**12. Nestboxes.** Edwin Cohen and Bruce Campbell. 1952. Field Guide Number Three of the British Trust for Ornithology. Oxford. 32 pp., 22 figures. 2s. 6d. This excellent analysis covers boxes and other devices known to have been used by 27 species of birds in Great Britain in recent years. Some 20 designs are discussed in detail. The best of these is the Upton Permanent Box, with hinged front, fulfilling Mr. Upton's three requirements of "ease of observation (including handling nestlings); resistance to weather; a long life with minimum repairs." No design with a hinged side is shown, although these tend to be superior to top-opening boxes. While a reference is made to the use of creosote as a wood preservative, no stress is laid on the fact that the use of creosote or one of the newer wood preservatives is likely to double the life of a box and is therefore highly advisable except on short-term projects. Some general considerations on the type and locations of nesting boxes do not apply with equal force on this side of the Atlantic; for example, boxes on the top of a pole have only limited usefulness in Great Britain, since it appears that no species demand sites in the open away from trees, like the Tree Swallow, *Iridoprocne bicolor*, or Purple Martin, *Progne subis*, in eastern North America. It is stated that at least one type of box on a pole has not proved satisfactory if exposed to the mid-day sun, but no such difficulty has ever been noted in this country, even for locations affording no shade during the entire day providing that the box is large enough, is ventilated, and is not made of excessively thin wood. A warning is included against boxes with two or more compartments; while we do have one exception to this rule in that Purple Martins prefer a multi-compartment box, the rule is all too often overlooked by the amateur. In placing boxes, it was observed that more can be placed per acre if edges between different types of habitat are available; the optimum density in uniform cover varies considerably with the species of birds present.

There is a gap between this Field Guide and Field Guide Number One of the Trust, *Trapping Methods for Bird Ringers*, in that no shutters or other devices are shown for trapping adult birds in the boxes for banding. Such devices might well be considered out of place in Field Guide Number Three which is by no means limited in circulation to bird banders, but if Field Guide Number One is ever revised, a page might be devoted to the subject, to cover the comparative merits of automatic shutters (to be inserted inside a top-opening box at the time the adults are to be trapped) or non-automatic shutters, on the outside, with the com-

plete shutter built in or with provision made to slip a shutter into place when needed, so that one shutter can be used for any number of boxes of the same design. Any of these are far more satisfactory than impromptu devices such as hand nets.

While there are points that might be expanded or where American practice is a little different, the guide appears to be the most useful general summary of its kind now available in English.—E. Alexander Bergstrom.

**13. A Cuckoo in the Nest.** R. A. Reed. 1952. *The Bokmakierie*, 4(1): 14-15. Students of parasitism will be interested in this brief but detailed account of a few-days-old Red-chested Cuckoo, *Cuculus solitarius*, ejecting the egg of a Cape Robin, *Cossypha caffra*, from the nest. The ejection instinct had disappeared several days later.—Hustace H. Poor.

**14. The Breeding Behaviour of the Swift.** David and Elizabeth Lack. 1952. *British Birds*, 45(6): 186-215. Four years of observation on *Apus apus* nesting in boxes with glass backs; 16 to 20 pairs laid eggs each year while several non-breeding pairs, perhaps yearling birds, occupied other boxes. Some of the adults were extremely tame; others attacked an inserted hand, while still others were very shy and some deserted when ringed, so ringing of adults was discontinued. Violent fights were seen in the boxes, "the birds remaining grappled for up to five hours, but no serious harm usually resulted," p. 214. Mutual preening occurs between the members of the pair. Nesting material is caught in the air. "All the birds collected hay in large quantities when a field near by was cut." "The material is stuck to the nest with saliva. . . . The nest is shaped by the bird turning round in it and scrabbling with its feet. . . . Building stops completely when the young hatch. . . . The non-breeders continue building throughout the summer, but spend much less time than the incubating birds in sticking the material down," pp. 198-199. Fifty-eight ten-hour records of incubation were obtained. The parents share equally, periods ranging from 2 to 345 minutes. "The average number of reliefs occurring between 0800 and 1800 hours was 5.2, which means that the average interval for which the parent was away was 115 minutes," p. 203. "The eggs were sometimes left uncovered during the day for periods of up to 6½ hours. The influence of weather on the incubation rhythm is obscure," p. 214. As to brooding, "in 17 ten-hour watches on broods under a week old, the young were covered for 98 per cent. of the time, and in 11 similar watches on broods in their second week for 52 per cent. of the time, while young more than a fortnight old were covered for 7 per cent. of the time or less," p. 205.

"The chicks are normally fed on the nest itself. This is true even in the later stages, when between feeds the chicks wander about the box and often sit looking out of the entrance hole. On the return of a parent, they dash back to the nest and beg for food," p. 206. Young are not recognized individually, nor do the parents seem aware of the number of their young. After the young of one brood had left, the authors gave the adults a starving, stunted chick that had been deserted by its own parents; the foster parents fed it till it was fledged 15 days later. Amazingly enough, the young Swift leaves the nest independently of its parents and apparently starts immediately on its migration. A very fine paper.—M. M. Nice.

**15. Notes on the Biology and Reproduction of the Mistle-Thrush.** (Notes sur la biologie et la reproduction de *Turdus v. viscivorus* L. 1758). André Labitte. 1952. *Alauda*, 20(1): 21-30. Dates are given for the laying of the first egg in the Department of l'Eure and Loire from 1928 to 1951; these range from March 20 to April 5, but no data are offered in regard to temperatures for the different years. "Pair-formation takes place in January and February, but nesting-territories are not occupied before late February or early March." Two broods are regularly raised, occasionally three.—M. M. Nice.

**16. Increasing the Goldeneye Population with Nest Boxes.** (Telkkäkannan Lisääminen Pesäpönttöjen Avulla.) Mika Siren. 1951 (1952). *Suomen Riista* (Helsinki), 6: 46-65 (English summary pp. 189-190). The results of a five year study to determine the nest-box preferences of the Goldeneye, *Bucephala clangula*, at the Evo Wildlife Research Station in Finland. "When the investigation began

there were no goldeneyes in the area. In 1951 not less than 11 boxes were in use." This section of the report shows the important items to be considered in constructing and erecting the boxes, amply and clearly illustrated with photographs and diagrams. The remainder of the report, dealing with the life history and breeding habits of the species, is to be published later.—O. L. Austin, Jr.

## BEHAVIOR

(See also Numbers 7, 11, 14, 31, 47, 50, 56, 57, 58.)

**17. Is the Begging Reaction Released by Lessened Illumination?** (Wird die Sperreaktion von Verfinsterung ausgelöst?) Holger Poulsen. 1949. *Ornis Fennica*, 26(3): 65-67. In order to test Lorenz' statement (1935, *Journal für Ornithologie*, 83: 194) that very many young hole-nesters begin to beg in response to sudden darkness, the author placed a cardboard noiselessly before the entrances of a nest of Pied Flycatchers, *Muscicapa hypoleuca*, with small young and of a nest of Lesser Spotted Woodpeckers, *Dryobates minor*, with large young. In neither case did the young respond with begging. This was also true with nestling Starlings, *Sturnus vulgaris*, as reported by Holzapfel (1939, *Journal für Ornithologie*, 87: 525-553).

Noiseless darkening of the nest hole released begging in Flickers, *Colaptes auratus*, before their eyes opened (Sherman, 1910, *Wilson Bulletin*, 22: 135-171), and when half-grown (Lehrmann and Stephenson, 1940 *Proceedings Linnaean Society New York*, 50, 51: 36-37). The Heinroths (1926, *Vögel Mitteleuropas*, I: 312) found this to be true with Rollers, *Coracias garrulus*; European Kingfisher, *Alcedo atthis*, and Woodpeckers. It may be that Mr. Poulsen's woodpeckers were too old, for in response to a scratching on the bark of the tree their heads appeared at the entrance to the hole.—M. M. Nice.

**18. Innate and Learned Enemy Recognition by the Bullfinch.** (Ueber angeborenes und erworbenes Feinderkennen beim Gimpel (*Pyrrhula pyrrhula* L.). Gustav Kramer and Ursula von St. Paul. 1951. *Behaviour*, 3(4): 243-255. Eight male Bullfinches, caught as fledged juveniles, were tested alone with the observer invisible to the birds and the test object invisible to the observer. Photographs are given of 15 of the test objects which ranged from a stone through crude models of birds to mounted specimens of various birds. Considerable anxiety was shown over a Pygmy Owl, *Glaucidium passerinum*, but this soon passed off. In general, specimens of hawks and owls were not more effective than specimens of harmless birds. The larger of two comparable objects was more effective than a smaller one, at least up to the size of a Capercaillie, *Tetrao urogallus*. The birds showed "anxiety responses to objects having the following features: 1) A hairy or feathered texture, 2) A convex shape, 3) A coloured surface—white being less effective than tan or spotted tan." These reactions would be of protective value against a lurking marten or squirrel, or sunning owl.

Chasing of the Bullfinches with a mounted kingfisher, *Halcyon pileatus*, with a large red bill caused fright which lasted for months. "The frightening effect was confined from the beginning to the pursuing species and members of the same family (Halcyonidae). The long red beak by itself, which is a very conspicuous feature from Man's viewpoint, is not an independent criterion of the dangerous species."—M. M. Nice.

**19. Maturation and Learning in the Improvement of Some Instinctive Activities.** Holger Poulsen. 1951. *Videnskabelige Meddelelser fra den Dansk Naturhistoriske Forening*, 113: 155-170. Experiments were made on flight and pecking. Two sets of nestling Barn Swallows, *Hirundo rustica*, were taken at the age of six days and raised in boxes where they were unable to use their wings; at the age of 22 days (June 6 on p. 160 should read June 18) when their nest mates flew, they were shaken out of their boxes and flew as well as wild birds. Another set were kept for eight days after their nest mates had left the nest and they flew as skillfully as their brothers and sisters. Domestic chicks, kept in the dark for four days after hatching and fed by hand, when brought into the light pecked indiscriminately at sand, seeds, etc., but in four hours had learned to peck

only at seeds. The "improvement of the pecking reaction is due to maturation of the pecking movement and to a completion by imprinting of the innate mechanism releasing the pecking reaction."—M. M. Nice.

**20. Food Storage, Territory and Song in the Thick-billed Nutcracker.**

Per Olaf Swanberg. 1951. Proceedings of the Xth International Ornithological Congress, Uppsala: 545-554. Exceedingly interesting paper on *Nucifraga c. caryocatactes* in southern and central Sweden. These birds subsist on hazel-nuts, *Caryotus avellanana*, which they gather and store in the autumn, devoting their whole time during some three months to this work. Early in the morning they leave their territories in the spruce forest, fly direct to the hazel-coppices which may be as far as six kilometers away, collect the nuts in their throat pouches, then return home and bury the nuts in small heaps, covering them with moss or lichens. About three minutes after they arrive, back they start again, working all day long. They store so many nuts that in the spring these form the chief food of the young. They remember where they have stored the nuts and also remember which stores they have used; of 351 excavations, many of them through snow as deep as 18 inches, 86 percent were successful.

Nutcrackers mate for life and keep the same territories year after year, one pair for as long as ten years. No fighting nor displays have been seen in maintaining the territories; apparently their harsh cries are sufficient for this purpose. Song occurs only for a few weeks before and during nest-building; it is weak and given by the male only. It functions not as proclamation of territory, but as a mating song.—M. M. Nice.

**21. Recent Advances in the Study of Bird Behaviour.** N. Tinbergen.

1951. Proceedings of the Xth International Ornithological Congress, Uppsala: 360-374. Three main categories are discussed: underlying casual relationships responsible for behaviour; the problem of biological significance; and finally of evolution. Under the first, the influence of external stimuli covers two problems: "which processes in the external world the sense organs can receive," and next "which stimuli are actually causing behaviour of a given type." (p. 363). Other topics discussed are spontaneity, releasing and directing stimuli, appetitive behaviour and consumatory act, displacement activities and learning process. Under biological significance the matter of colour pattern is discussed. "Apart from cryptic colours, and various types of conspicuous coloration, all playing a part in the defense against predators, the releaser type of colour marking begins to be understood." (p. 370). "A Nightjar (*Caprimulgus europaeus* L.) sits very tightly and does not leave the nest until a predator is very close, whereas a gull (*Larus*) or a tern (*Sterna*) leaves its nest at the slightest alarm. This of course is correlated with cryptic coloration, of the adult in the first case, of the eggs in the second case."—M. M. Nice.

**22. Some Experiments on Imprinting Phenomena in Ducks.** Eric Fabricius.

1951. Proceedings of the Xth International Ornithological Congress, Uppsala: 375-379. An excellent summary in English of the notable experiments published in German and reviewed in *Bird-Banding* for April 1952. Ducklings shortly after hatching were readily imprinted to the experimenter if he moved his hand slowly towards them and walked away; also if he called with a rapid series of short sounds. Even short hissing sounds made with a rubber tube released following reactions, although "long hissing sounds released escape reactions." The strongly instinctive nature of this imprinting is shown by the fact that newly hatched Tufted Ducks, *Aythya fuligula*, crept to older ducklings of other species and "followed them in spite of the fact that the eiders and shovellers harassed and nipped them violently." These ducklings "have a typical and well-developed innate releasing mechanism (Tinbergen 1939) for their instinctive reaction to follow a potential parent bird . . . The sign stimuli are so simple that the innate releasing mechanism is very unselective. During the first reaction, however, the mechanism becomes completed with conditioned elements, which makes it more selective. Thus, the duckling in imprinting does not attain a 'releasing schema' for its reaction to follow a parent bird, but it only completes an already innate releasing mechanism."—M. M. Nice.



**23. The Upland Plover in Southwestern Yukon Territory.** Irvén O. Buss. 1951. *Arctic*, 4(3): 204-213. Five pairs of Upland Plover, *Bartramia longicauda*, were studied during July and August, 1950, along the Duke River, southwestern Yukon, to supplement similar studies made in Wisconsin (Buss and Hawkins, 1939, *Wilson Bull.*, 51: 202-220). It was concluded that the young are not fed by the adults; that the young range widely during active feeding time but remain within very restricted limits during resting periods; that adults control the movements of young and guard them against enemies; and that protective coloration provides the main protection for both adults and young. An increase of 23 percent at the end of the breeding season over spring numbers was similar to population increases elsewhere and indicates a relatively low reproductive rate for this species and therefore a low natural turnover rate after mature size is reached. A relatively large home range seems essential as a suitable breeding or summer area. Evidence secured in the Yukon indicates that they depart soon after the young can fly or after nesting failure. Four adults collected between July 15 and August 12 showed no premigration deposition of fat in contrast to Wisconsin specimens taken when migration was beginning.—W. Earl Godfrey.

**24. On the Courtship and Breeding Biology of the Ruff.** (Ueber die Balzerscheinungen und die Fortpflanzungsbiologie beim Kampflauer (*Philomachus pugnax* L.)). Waldemar Lindemann. 1951. *Zeitschrift für Tierpsychologie*, 8(2): 210-224. A very fine paper with clear descriptions and telling sketches, based on 500 hours of observation, largely in East Poland. Social, aggressive, and sex drives are intermingled in the Ruff's courtship. The birds return year after year to their courting grounds; the males fight each other two by two, but no male defends a particular spot. At his first arrival on the courting grounds the male takes the *Imponierhaltung* — impressive display — with bill pointing skyward and ruff outspread. Threat is expressed by horizontal posture with bill directed toward opponent. Both males then lower their heads and attack each other, getting hold of each other's ruffs and holding on for about four minutes. Fighting takes place whether females are present or not. Females do not necessarily choose the best fighter, but they are apt to prefer males with the most colorful ruffs, standing in the most imposing manner on stations in the middle of the field. When a female comes to such a male, he at once takes a "humble position," bowing very low with bill pointing towards his feet, then crouching on the ground. She starts to nibble at his ruff, whereupon both bill each other and coition soon follows. The female may later go to another male. No jealousy is shown between the males. The male has no courtship displays that symbolize nest molding or building. Males become dominant over each other through their duels; they stand in the best places and they lead the flocks in late summer and on migration. Males migrate farther south than the females. The biological significance of the fighting lies in the optically attractive effect on the females of the lively play of color and movement.—M. M. Nice.

**25. On the Living Habits of the Hazel Grouse, *Tetrastes bonasia* L.** (Om Järpens Levnadsvanor.) A. Pynnönen. 1950. *Suomen Riista* (Helsinki), 5: 7-27 (with two page summaries in Swedish and English). "Hazel grouse live in territories of 2-16 ha. After the broods have dispersed in autumn the young males seek suitable areas, particularly hillsides in order to secure their own woodland territories." About the same time the females "appear in the territories where the old males have lived over the whole summer." Males defend their territories by whistling, buzzing with the wings, ruffling the feathers, chasing each other in flight and "the running of two males side by side on the ground, even for as long as ¾ hour," p. 26. No fights have been seen. "Mating display has been observed by the author chiefly in females arriving in the territories in the autumn in order to form pairs. The female probably plays the leading role in pair formation. The author has even seen 3 females simultaneously trying to mate with a male." After the young have hatched the female leads the brood to good feeding grounds and protects them. "Four different kinds of sounds made by the female have been observed, which are used to notify the approach of different kinds of danger. . . . The chickens gather under the female's wings 3-4 times an hour. Between the rest periods the brood moves on some 20 meters during about 10 minutes." Only

occasionally does the male accompany the female and the young. Since the Hazel Grouse lives in thickets, the sense of hearing plays a large role; for the "little chickens the call of the female is the most important thing," while the adult heeds the noisy steps of hunter or cow in the brushwood.—M. M. Nice.

**26. Displays and Characteristic Postures of the Adelie Penguin.** (Parades et attitudes caractéristiques de *Pygoscelis adeliae*.) (Expéditions polaires françaises (Missions P. E. Victor). Expédition antarctique en Terre Adelie 1949-1951. Note ornithologique No. 2). J. Sapin-Jaloustre and F. Bourlière. 1952. *Alauda*, 20(1): 39-53. Six types of display are illustrated with photographs and their function discussed. Counts were made on the frequency of different types of behavior at successive phases of the breeding cycle; these are presented in graphs. "The 'mutual display' seems to have more social than sexual significance and most of these displays and attitudes have probably different functions in different circumstances. Thus the Adelie Penguin seems to have a limited 'set' of visual stimuli at his disposal." No support was found for Roberts' (1940) trial-and-error theory of sex recognition.—M. M. Nice.

**27. Homing Not Hindered by Wing Magnets.** W. Van Riper and E. R. Kalmbach. 1952. *Science*, 115 (2995): 577-578. Experiments to test Yeagley's (1947) theory that homing pigeons "perceive the effects of the earth's magnetic field and the Coriolis force." Trained pigeons were used that had always been flown to Denver from points northwest, the birds being released early in the morning with the sun in the east and the Rockies in the west. Control plates were fastened to the wings of all the birds and they were exercised for a week. Magnets were then substituted on 8 of the birds, the other 8 carrying control plates. The birds were released at 5-minute intervals south of Denver; all but one flew south with the sun in the east and mountains in the west. None returned the first day, but from the second to the fifth day 5 returned with magnets, and 4 of the controls. The magnets had not confused their bearers, hence the experiment tends to disprove Yeagley's theory.—M. M. Nice.

**28. A Study of the Breeding Biology of the Purple Martin (*Progne subis*).** Robert W. Allen and Margaret M. Nice. 1952. *The American Midland Naturalist*, 47(3): 606-665. Robert W. Allen was a promising and rising young naturalist who had almost finished his doctorate thesis when he went into the army in 1942. He was drowned in New Guinea in October 1943, and the results of his work on the Purple Martin would have been lost to posterity had not his friends found his thesis material in "neatly typed second draft, but not ready for publication" and placed it in the capable and willing hands of Mrs. Nice for completion. Mrs. Nice was not content merely to edit the ten-year-old type-script. She reworked the material entirely, added a great deal of hitherto unpublished data of her own, and brought the study completely up-to-date. She has produced a careful and authoritative monograph that is not only, as Mr. Stickel notes in his short foreword, "truly a joint publication," but which will remain the standard on this species for a long time to come.

The choice of Mrs. Nice to complete this work was a particularly happy one, and had Allen known of her willingness to do so he would have felt greatly honored. Though a grandmother, she is as youthful in her viewpoint and enthusiasms as was her collaborator, and with just as little reverence for the "sacred ibises" of ornithology. Nothing annoys her more than the loose statements, errors, and inaccuracies that have become ornithological gospel through constant repetition, and which continue to be repeated without questioning. Both Allen's and her own careful investigations and observations show the literature to be in error on many aspects of Martin behavior, on such easily determinable facts (if one takes the time and trouble to watch the birds) as territorial relationships, individual distribution, duration of incubation, and other nesting phenomena. When she notes that Audubon's highly erroneous but "cheery statement" of 1831 that the Martin is multi-brooded is copied unchallenged as recently as 1942 (in Bent's *Life Histories*) she voices the plea that "writers will be more discriminating in what they copy from the authorities," to which I gratefully add my "Amen."

The greater part of the paper, as the title implies, is given over to the breeding behavior and habits of the species. Migration and the start of nest building are shown to be correlated with temperature, though the evidence is not as conclusive as one might wish. The percent of nesting success is given from field studies by both authors, and compared with the published findings of others not only for the Martin, but in other hole-nesting species. For a bird so easily captured and handled as the Martin, the banding data are disappointingly few. Only 135 returns and recoveries were available. The 82 banded as adults show an annual mortality of 50 to 70 percent, the 53 banded as young 30 to 50 percent. The oldest known Martin reached eight years of age, but the yearly totals are too small and erratic to allow the formulation of a reliable life-table. Site tenacity, the return of young to the place of hatching and the return of adults to their previous nesting place, is shown incontrovertibly ("published authority" to the contrary) to be a major behavior trait in the species, but its degree cannot be calculated accurately from the data at hand.

The Purple Martin offers excellent opportunities for future investigations by the banding method, which will be all the more productive for the spade-work and the sound foundation provided by this monograph. Mrs. Nice and the friends of the late Robert Allen are to be congratulated for making this study available to ornithologists as a tribute to Allen's memory.—O. L. Austin, Jr.

## ECOLOGY

(See also Numbers 42, 54.)

**29. Study of Bird Populations in the Apple Orchards of the Annapolis Valley, Nova Scotia, with Particular Reference to the Effects of Orchard Sprays Upon Them.** John P. Kelsall. 1950. Canadian Wildlife Service, Ottawa, Wildlife Management Bull., Ser. 2(1): 1-62, 12 figs. Ten apple orchards in the Annapolis Valley, Nova Scotia, were studied from May to September, 1946. Most well-kept orchards provided little food and shelter for birds and on the 138.8 acres censused only about one bird per acre was found. Where outbreaks of insects occurred, however, as many as 11 birds per acre were counted. The Song Sparrow *Melospiza melodia*; Robin, *Turdus migratorius*; Chipping Sparrow, *Spizella passerina*; and Slate-colored Junco, *Junco hyemalis*, in that order of abundance made up over 75 percent of birds found in normal orchards. In budmoth-infested orchards numbers of the Savannah Sparrow, *Passerculus sandwichensis*, increased sharply to the status of second commonest species, the Song Sparrow still being numerically superior. In aphid-infested orchards warblers made up about 50 percent of the birds counted. In over 100 acres carefully examined only nine nests were found: eight of the Robin and one of the Chipping Sparrow. Commercial sprays and spraying are described and the conclusion is reached that poisoned sprays normally used in commercial orchards in Nova Scotia have no readily observable direct effect on migratory birds nesting or feeding in those orchards.—W. Earl Godfrey.

## WILDLIFE MANAGEMENT

(See also Numbers 17, 36, 43, 51.)

**30. Observations of Ruffed Grouse in Southern Ontario with a Discussion of Cycles.** A. Murray Fallis and C. E. Hope. 1950. *The Canadian Field-Naturalist*, 64(2): 82-85. Observations of the Ruffed Grouse, *Bonasa umbellus*, were made in Peel Co., Ontario. Clutch size in 13 nests examined, 1944-1947 inclusive, averaged 12.2. Results of a single experiment to determine the effect of removing eggs from the nest during the laying period suggested that this has no effect on the total number of eggs laid. Data from five spring seasons, 1944-1948, indicated some correlation between weather and the initiation of drumming, egg laying and incubation. Of 23 nests seen, 14 were destroyed by predators, presumably foxes or skunks. A number of factors that may affect grouse populations significantly are discussed briefly and because of the number and variability of

these it is considered impossible to expect regular cyclical phenomena over large areas at a given time. Doubts are cast on the future usefulness of compiling questionnaire data on population trends alone. It is suggested instead that data be gathered annually on sex ratios from hunters' bags, numbers of drumming males in spring, number and size of broods, numbers of predators, as well as information on disease and parasitism from large numbers of localities.—W. Earl Godfrey.

**31. Breeding Behaviour of the Ring-necked Pheasant on Pelee Island, Ontario.** K. E. Ball. 1950. *The Canadian Field-Naturalist*, 64(6): 201-207. The Ring-necked Pheasant, *Phasianus colchicus*, was studied during 1946, 1947, and 1948 on Pelee Island, Ontario. The 1947 hunting season left a ratio of one male to ten females but this appeared adequate to produce a harvestable surplus in succeeding years. Territories defended by males were somewhat plastic and subject to frequent readjustment. Crowing and crowing rates, display, defense, and territories are described and certain census methods are commented upon.—W. Earl Godfrey.

**32. On the Hunting of Seafowl in the Northern Countries.** (Om Sjöfågeljakten i de Nordiska Länderna.) D. Wikström. 1951 (1952). *Suomen Riista* (Helsinki), 5b: 60-83 (with 2-page English summary). A discussion of the problems of protecting waterfowl on the high northern breeding grounds, where the human population is to a large degree dependent on an annual harvest which can be taken successfully only in the spring. The methods of hunting are described, and the main migration routes delineated. Shooting over decoys in spring is recommended as the least destructive form of shooting, as "it enables accurate identification of the individuals to be shot, wounding is rare, and the pairs that have already started nesting seldom come to the decoys. . . . The most destructive form of shooting in the spring is the stalking shoot along the shore, as many birds . . . that have already started nesting will be shot. Shooting on the wing is more destructive than the other forms of shooting in that it wounds a relatively large number of birds as compared with the actual bag." The advisability of restricting the kill to males only is questioned on the lack of definite information on such factors as "the male-female ratio in chicks, the breeding value of males of different ages, whether one copulation is sufficient to fertilize the whole clutch of eggs, the number of females one and the same male is capable of fertilizing, and whether waterfowl, in spite of the fact that they live in colonies, have a nesting territory and if so how extensive it is." It is concluded, nevertheless, that "the nesting females, at least, should be spared, as in most cases they return to the same areas to nest."—O. L. Austin, Jr.

**33. Game and Game Management in the Åland Archipelago.** (Det Jaktbara Villerådet och Jaktvården på Åland.) Sven Nordberg. 1951 (1952). *Suomen Riista* (Helsinki), 5b: 7-59 (with 3-page English summary). A history of the game animals and birds of this high northern group of islands, which have undergone an amazing series of changes during recent times. Wildlife is an important source of income to the inhabitants of the region, who have existed for centuries by fishing, sealing, eggling, and fowling. Large game, roebuck and moose, formerly reserved for royalty, were extirpated centuries ago, though the moose has recently returned in small numbers. Economic upsets engendered by the wars of this century have been disastrous to the wildlife, but five voluntary societies are now active in game protection, and are achieving excellent results. The techniques used are those of reducing natural predation where possible, limiting the harvest, and providing as much sanctuary areas as possible. Among the native predators "a most destructive enemy of the seabirds is the crow, which steals eggs, but . . . the great black-backed gull is the most harmful of the noxious animals." A bounty system has been instituted, with what results is not stated. Overly-efficient hunting methods such as shooting from motor boats are prohibited, and regulatory seasons are strictly enforced. It is shown, however, that "a mere limitation of the hunting seasons is not sufficient," and the current trend is to provide complete protection over large sanctuary areas, which "may also act as centers of spread for the seafowl. This is undoubtedly the most effective method of game preservation."—O. L. Austin, Jr.

**34. One-sided Levying of Males, a Disastrous Procedure for the Development of Game Stocks.** (Yksipuolinen Koiraiden Verottaminen Tuhoisa Riistakannan Kehitykselle.) Paavo Voipio. 1951 (1952). *Suomen Riista* (Helsinki), 6: 66-82 (English summary pp. 188-189). The game laws of Finland have for a long time allowed a much longer hunting season on males than on females of the Capercaillie and the Blackgame, the two most important of the resident gallinaceous species. Even when both sexes may be taken, hunting tends to a more intensive harvest of the males. These conditions favoring the survival of hens have created an abnormal sex ratio which is blamed for the present comparative scarcity of both species in the Finland forests. "The blackgame and probably also the capercaillie are promiscuous (not polygamous) and the natural sex ratio is evidently 1:1, or with a slight preponderance of males. A sharp deviation from this ratio at the expense of males has an unfavourable effect on display ceremonies (psychological factors) and thus on the productivity of the population. Furthermore, as a considerably unbalanced sex ratio decreases the effective size of the population, it may in the long run, and particularly in the sparse local populations during cyclic lows, have a detrimental effect on the survival and productivity of the population." The hunting statutes of 1951 have been altered to provide hunting seasons of equal length for both sexes, which is expected to decrease the disproportionate hunting pressure on the males.—O. L. Austin, Jr.

**35. Crop Damage by Wildlife in California with Social Emphasis on Deer and Waterfowl.** Earl R. Biehn. 1951. Game Bulletin No. 5, State of California Department of Fish and Game, Bureau of Game Conservation, pp. 1-71, illus. Judging by the reports it is publishing, the State of California has one of the most active and progressive Fish and Game Departments in the United States. This treatise on the serious matter of interference with agriculture by wildlife is an excellent example of the way it is attacking its problems.

"Waterfowl . . . cause damage mainly from the time they come into California in early August until they leave again in the spring. Most of the damage occurs in the late summer and in the winter months. Heaviest damage is reported on rice, barley, lettuce, wheat, alfalfa, pasture, and clover; and the worst offenders are mallards, pintails, and widgeon; white-fronted, cackling, lesser snow and Canada geese; and coots or mud hens." With the commendable stated aims of "(a) determining the needs that must be met to take care of waterfowl as a natural resource to perpetuate and utilize, (b) to provide means to feed waterfowl and minimize crop depredations, and (c) to make available to the common hunter a place to get a full day's shooting," the crop damages by waterfowl are analyzed factually and dispassionately, the methods of control that have been tried are described with comments on their relative effectiveness, and recommendations are made as to the most promising methods of solving the difficulties.

"The control of waterfowl damage is accomplished by the use of frightening devices of various types; systematic herding from the ground and by airplane; and the provision of management areas where food crops are grown and flooded at the time of damage, so as to supply adequate feeding and resting places for the birds as well as suitable hunting grounds for the public. It is the conclusion of the writer that these feeding and resting areas will eventually solve the greatest part of the problem of waterfowl depredations in California. At the present time these areas are inadequate in both size and number." The real worth of the California Department of Fish and Game will be determined by the success its Director and executives have in putting into practice the recommendations of its research men.—O. L. Austin, Jr.

**36. Sex Ratios in Pheasant Research and Management.** Fread H. Dale. 1952. *Journal of Wildlife Management* 16(2): 156-163. Sex ratios are important in determining population estimates from crowing-cock indices and hunting-season harvests and as an index to the productivity of pheasant, *Phasianus colchicus*, populations, yet reliable techniques for determining sex ratios are lacking. It is shown that a crowing-cock index of 23 with a sex ratio of 53:100 (cock:hen) represents a population of 44 in a unit area under protection, while an index of 10 cocks with a sex ratio of 10:100 represents a population of 110 per unit area open to hunting of cocks only. Without the sex-ratio data, the indices are misleading.

Quality of pheasant habitat, annual production, and population density also affect the ever-changing sex ratios. It is shown mathematically that the success of the breeding season may be measured by fall sex ratios (young plus adults) when the adult ratio is sufficiently divergent (6-7 hens per cock), since fall sex ratios tend to become equalized. A fall ratio of 1.5 hens per cock indicates low production, regardless of the adult sex ratio. That the young:adult ratio of cocks harvested cannot be used to measure production of hens without sex-ratio data is demonstrated by comparing one area where 18.5 young per adult were harvested with another where 12.3 young per adult were harvested. Because of a difference in sex ratios (14:100 on the former; 20 to 25:100 on the latter) the production was approximately equal on both areas. Some inaccuracies of sex-ratio data obtained under current methods are pointed out. The only positive method of determining fall adult sex ratios is by shooting both sexes; this could be used as a base-line for testing other methods.—Helmut K. Buechner.

### POPULATION DYNAMICS

(See also Numbers 7, 8, 10, 23, 28, 30.)

**37. Investigations of Woodcock, Snipe and Rails in 1951.** John W. Aldrich and others. 1952. Special Scientific Report—Wildlife No. 14, U. S. Fish and Wildlife Service and Canadian Wildlife Service. Place of publication not given. 58 pp., two maps, photo-offset. Price not given. This report includes extensive data on breeding and wintering populations of Woodcock, *Philohela minor*, Wilson's Snipe, *Capella delicata*, and Clapper Rail, *Rallus longirostris*, under the following individual headings: "Woodcock in South Louisiana During the Freeze of January-February, 1951", by John Lynch; "Wintering Woodcock Populations in West-Central Louisiana 1950-51", by Phil Goodrum and Vincent H. Reid; "Woodcock Singing Counts—Eastern Canada, 1951", by Victor E. F. Solman; "Woodcock Census Studies in Northeastern United States, 1951", by Howard L. Mendall; "Woodcock Census Studies in Delaware, Maryland, North Carolina, New Jersey, Pennsylvania, West Virginia and Ohio, 1951", by P. F. English; "Woodcock Breeding Ground Studies in the Central Northern States in 1951", by John W. Aldrich; "Census of Woodcock Breeding Population in Vicinity of Patuxent Refuge, Md., in 1951", by Robert E. Stewart; "Studies of Breeding Woodcock in Massachusetts", by William G. Sheldon; "Woodcock Banding with Bird Dogs", by Bruce Wright; "Wilson's Snipe Wintering Ground Studies, 1950-51", by Chandler S. Robbins; "Wilson's Snipe Singing Counts in Eastern Canada—1951", by Victor E. F. Solman; "Wilson's Snipe Breeding Ground Studies in Minnesota, 1951", by Chandler S. Robbins; "Wilson's Snipe Population at Gray's Lake, Idaho", by Thomas D. Burleigh; and "Clapper Rail Studies—1951", by Robert E. Stewart. Sheldon's and Wright's Woodcock studies and Stewart's Clapper Rail work are using banding extensively. Sheldon's contribution runs to 15 pages, and is the outstanding paper in the group. It demonstrates the need of at least three or more census trips during a spring season and continued well into the nesting period to estimate a population adequately.

None of these papers is a complete or finished study, and the collection could better be entitled "progress reports." While none possibly is conclusive enough to warrant publication in a major scientific journal, a great many worthwhile data are presented that other investigators will want for reference. The way in which these papers are published, however, presents several bibliographical difficulties. Mimeographed material is generally considered too ephemeral to review and index, and the same attitude is often taken toward material produced by photo-offset if the pages resemble mimeographed pages. It is particularly hard to be sure of indexing material issued at irregular intervals in a special series, especially when the series is not distributed regularly to a mailing list including the major reviewing media, and when no list of previous titles is included with each issue (such lists could be printed on the several blank pages on the covers of these reports). We have seen only Reports Number 1 and 14. Report Number 5, on Guatemala, is reviewed in *The Auk*, 69: 332, July, 1952. It is assumed (and hoped) that the intervening reports deal with subjects in which ornithologists in general and banders in par-

ticular have no concern. If such papers do not appear in a format that insures reviewing and indexing, much of their value is lost.

The lumping of 14 reports under one author works an injustice to the other contributors, no less excusable by financial necessity or the fact that it is accepted practice in some scientific circles. Bibliographic credit for Report No. 14 (as for Report No. 1) goes to Dr. Aldrich who, as Chief of the Section of Distribution and Migration of Birds and Mammals, Branch of Wildlife Research, of the Fish and Wildlife Service, has the immediate responsibility of supervising and directing these investigations. Dr. Aldrich's direct contributions to this Report consist of the two-page introduction and a short summary of the results of other workers in Michigan and Minnesota. Were the common governmental practice (especially among the military branches) of publishing similar reports under the name of the chief or the commanding officer of the organization issuing them carried to its logical conclusion in this instance, these papers should be issued under the name of the Director of the Fish and Wildlife Service, which would be no more unfair to the individual contributors. In this day when research scientists (atomic physicists and electronics experts excepted) are woefully underpaid, and especially in the government employ where salaries under civil service are determined not by the caliber and importance of one's scientific knowledge and ability, but primarily by the number of subordinates one supervises, the researcher must depend for most of his reward, pleasure, and satisfaction on his work itself. A major aspect of this is the acknowledgment and judgment of his efforts by his peers outside his own organization, which he is denied if he does not receive bibliographic credit for his publications. In the present case, the fairest way would have been to have omitted any indication of authorship on cover and title page. This would have compelled all indexers to do just what a careful scientist will do, to record each contribution under its own author. While any publication of these extensive data is welcome, it is hoped that in the future some way can be found to make them available more widely and regularly, to assure their indexing where future workers can find them, and to give proper credit to the individuals who produce them.—E. Alexander Bergstrom.

**38. Some properties of the hypergeometric distribution with applications to zoological sample censuses.** Douglas G. Chapman. 1951. *Univ. Calif. Public. Statist.*, 1(7): 131-160. A discussion of certain estimates of the size of a finite population by sampling without replacement. In the specific cases it is assumed that the whole number of individuals marked is less than the number of all individuals in the sample (which is unduly restrictive). The two special cases are size from a single sample and comparison of population sizes.—Charles H. Blake.

**39. Mourning Dove Production in North Dakota Shelterbelts, 1950.** Wilbur Boldt and George O. Hendrickson. 1952. *Journal of Wildlife Management* 16(2): 187-191. In this study of the Mourning Dove, *Zenaidura macroura*, 40 nests with eggs and 3 with young were found in 56 acres of shelterbelts with an estimated breeding population of 39 Doves (less than 20 pairs). Fifty-four young, or 1.8 per successful nest, were hatched from 25 (58 percent) of the 43 nests. Seventy-four eggs were found; 32 nests contained 2 eggs each, 7 contained 1 egg each, and 1 nest contained 3 eggs. Forty-nine (66 percent) of the eggs hatched and 41 young succeeded in leaving the nest. The known production represented an increase of 114 percent over the breeding population.—Helmut K. Buechner.

## FAUNISTICS

**40. Little Auks in Britain, 1948 to 1951.** D. E. Seargeant. 1952. *British Birds*, 45(4): 122-133. *Alle alle* normally winters north of England where plankton is presumably more abundant than farther south. In the winters of 1948-49 and 1949-50 large numbers of these birds were present in British waters, and in February 1950 a "wreck" occurred, a large number of the birds being blown into Ireland, Great Britain and northern France, some as far as 250 miles inland. Such birds appear to be weakened from lack of food. Similar "wrecks" of Dovekies took place on our side of the Atlantic in 1932 and 1936.—M. M. Nice.

**41. A Census of Common Sandpipers in the Sedbergh Area, 1951.** E. I. Cuthbertson, G. T. Foggitt and M. A. Bell. 1952. *British Birds*, 45(5): 171-175. There were 23 pairs of *Actitis hypoleuca* along 14 miles of the river Lune and its tributaries in 1939, and 26 pairs in 1951. Incubation lasted 21 days. The eggs hatched in 24 of the 30 nests found.—M. M. Nice.

**42. Seasonal Distribution of Bird Populations at the Patuxent Research Refuge.** Robert E. Stewart, James B. Cope, C. S. Robbins, and John W. Brainerd. 1952. *The American Midland Naturalist*, 47(2): 257-363. This detailed study of the Patuxent avifauna is one of the best arguments yet presented on the value of sight records carefully made by trained and able personnel, and properly evaluated in combination with specimen and banding records. In no other way could the data have been gathered to produce so complete a report on the current status of the bird life of the Refuge.

As background material for the ecological aspects of the bird distribution the paper describes the Refuge at some length, its location, size, history, and general physical and biological characteristics. The most useful section of the paper is the species account, where the relative abundance of each species is carefully evaluated, its seasonal distribution and status described, and earliest, median, and latest arrival and departure dates given. These data are analyzed to show the major seasonal trends and yearly variations in the land bird populations. Compared to similar population studies made elsewhere in the country, they show the seasonal population changes at Patuxent to be "fairly representative of those occurring throughout the Middle Atlantic and East-central States." Food supply and weather conditions are considered the most important factors affecting the yearly seasonal population changes. Water, marsh, and shorebirds are not as yet of importance on the Refuge because of the absence of suitable habitats. As these are developed under the Refuge program, an increase in the water bird population is anticipated.

This is the first major general population study I have seen in which frank use is made of records of birds taken in banding traps, which the authors state "proved invaluable in supplying quantitative data on migration peaks, duration of migration, and extreme arrival and departure dates, in addition to data on local movements, migration routes, population turnover, etc." It has been our experience at North Eastham, where we have been conducting a fairly extensive population study and banding program for a number of years (23 to be exact), that the qualitative data yielded by a trap line are almost of equal importance to the quantitative, and far more reliable and useful than those from sight observations alone. Again and again our traps and nets have produced species which had been overlooked in the field, and afforded us positive identifications of those that one can never be quite sure of through the binoculars, despite the amazing degree of perfection to which field identification has been developed in the last several decades.

Sight records are only as trustworthy and reliable as their makers, and some of them will always be suspect, regardless of their author's ability and reputation, especially those of difficult rarities. In the present list I for one would question the identifications of the Semipalmated and Western Sandpipers, of each of which only one was seen. I have found it frequently impossible to differentiate between these two species without the bird in the hand, especially when both species are not present side by side for comparison, and when banding "peeps" I always carry a ruler to measure any *Ereunetes* that seems to have a suspiciously large bill, only too many of which have proved to be within the limits of our common *pusillus*. Likewise, the conservative school would relegate to the hypothetical list the sight records of the Golden-winged Warbler — Blue-winged Warbler hybrids and the Dickcissel, from the evidence presented. In most plumages and under favorable conditions of observation these can be identified with a high degree of certainty, but a few additional data would have been valuable on each, to reinforce their claim to a place in the list. The sight record of the Black-capped Chickadee and the record of a Redpoll calling in flight overhead are subject to possible raised eyebrows, in view of the difficulty of identification and the lack of other records. Identification of a Redpoll in this way is normal in regions farther north where the bird may be common to abundant in flight years, but it does not seem quite good enough for a definitive list in the Patuxent area. The occurrences of the Yellow-bellied, Least and Alder Flycatchers in an area where the Acadian is the



common *Empidonax* are hard to evaluate. Banding and collecting these birds does not necessarily produce records of greater certainty than field observations of singing birds, particularly of the Least Flycatcher. In fall it may be impossible to distinguish Acadians from Yellow-bellieds even when specimens are taken, unless extreme care is observed in sexing and aging them (see R. M. Mengel, "Certain Molts and Plumages of Acadian and Yellow-bellied Flycatchers," *The Auk*, 69: 273-283, July, 1952). To me nothing, not even the species of *Oceanodroma* or *Phylloscopus* some of which are downright impossible, is harder to be sure of in the field than the members of the genus *Empidonax*, especially during the autumn flight when they have left their normal habitats and are not singing.

The importance of a study of this sort, however, is not the occurrence of the rarities, which nevertheless are the most fun and which all field observers, myself included, tend to overemphasize, but rather the routine censusing and evaluating of the common species about whose identification there can be little or no question. The data on their status presented in this paper will become more valuable as time goes on, as a basis for measuring and studying the changes in the fauna over the years as the Patuxent Refuge develops and the inexorable processes of nature take their course.—O. L. Austin, Jr.

### PARASITES AND DISEASES

(See also Number 5.)

**43. Trichomoniasis in Alabama Mourning Doves.** Arnold O. Haugen. 1952. *Journal of Wildlife Management* 16(2): 164-169. In the spring of 1950 and 1951, significant increases in mortality in Mourning Dove, *Zenaidura macroura*, populations resulted from an outbreak of trichomoniasis, an infectious disease caused by the protozoan, *Trichomonas gallinae*. The disease causes lesions and cankerous growths in the pharyngeal region, usually blocking the esophagus; apparently the birds die of malnutrition because of the inability to swallow food. Of 50 birds trapped in late summer, 16 percent showed signs of having suffered from trichomoniasis, indicating that some birds recover. The occurrence of only 3 young in 30 birds suffering from trichomoniasis, coupled with the fact that not one of 12 females dying from the disease showed signs of egg development during the nesting season, suggests that breeding is seriously curtailed thereby. It is believed that if the current trend of mortality continues for another year the effect of the disease will become serious. It is suggested that a similar disease may have been responsible for the rapid disappearance of the Passenger Pigeon, *Ectopistes migratorius*.—Helmut K. Buechner.

### MORPHOLOGY AND ANATOMY

**44. Colour Phase Investigations on the Screech Owl in Ontario.** N. D. Martin. 1950. *The Canadian Field-Naturalist*, 64(6): 208-211. Ninety-three specimens of the Eastern Screech Owl, *Otus asio naevius*, were classified into nine color grades, two of the red phase, five of the grey. Two grades between red and grey were not represented in specimens and no "intermediate" phase was found. In southwestern Ontario the red phase forms a greater proportion of the population than elsewhere in that province. No significant relationship between sexes and color phases was found.—W. Earl Godfrey.

**45. Sex and Age Determination in the American Coot.** Gordon W. Gullion. 1952. *Journal of Wildlife Management*, 16(2): 191-197. The techniques presented in this paper were developed by studying 130 American Coot, *Fulica americana*, held in captivity. The season and age at which the bursa of Fabricius atrophies completely is not known. Ten of 14 birds with bursae ranging from 15 to 30 mm. probed first in December or January showed no decrease by late June; one bird believed to be in its third winter had a bursa of 20 mm. in January, but by late June it had completely closed. Evidence from the present study indicates that birds of the year have blue- or gray-green tarsi; second-year birds have yellow-green tarsi; and birds in their third year have bright, clear yellow tarsi. Leg color in older birds tends towards a red-orange. The appearance of the

yellow-green was simultaneous with molt of the leg scales and occurred by mid-July in 11 of the captive Coots. The time of transition from yellow-green to yellow is not known but all birds defending territories through the winter had yellow legs. Sexes can be distinguished accurately by voice characteristics and by the larger neck ruff erected by the male during display. In 47 immature and yearling birds, there was an overlap of 21 percent between sexes in the culmen-frontal-shield length, the females ranging between 37 and 45 mm. and the males between 43 and 50. While there is considerable overlap in weight, adult males averaged 108 grams more than females. Leg length was found to be less than 60 percent reliable for determining sex; the metatarsus—mid-toe length was only slightly more reliable. Using the techniques established in this study, 123 birds showed a sex ratio of 108:100 (males:females). The age ratio of 79 birds taken at Gray Lodge was 100 immatures:24 yearlings:10 or 12 adults. It is pointed out that this ratio is similar to that obtained by Buss on the Ring-necked Pheasant, *Phasianus colchicus*, in Wisconsin. For first, second, and third-plus years, the Pheasant ratio was 100:26:13. Since the age ratios obtained by Gullion at Lake Merritt and Terminous are considerably distorted, especially with the yearling class practically absent on Lake Merritt, it is questionable whether the Gray Lodge age ratios should be used as characteristic for Coot populations.—Helmut K. Buechner.

**46. Growth and Differentiation of the Brain in Nidifugous and Nidicolous Birds.** Ernst Sutter. Proceedings of the Xth International Ornithological Congress, Uppsala: 636-643. In "young gallinaceous birds, rails and waders" the "growth of the brain is very much advanced compared with other organs. The hatching brain of *Coturnix* [European Quail] e.g. has only to increase its weight 3 times to reach adult size, while the body weight increases as much as 21 times." (p. 637). Nidicolous hatchlings, on the other hand, show small brain development and large intestinal development; the brain grows rapidly during nest life. The cerebellum of the hatchling Starling, *Sturnus vulgaris*, shows the same stage of development as that of the 12-day embryo of the domestic fowl; the myellization of the former at 12 days of age corresponds to that of the latter at hatching. "The nidifugous birds represent the families with the relatively smallest brains, while all high cerebralized birds belong to the nidicolous group," (p. 643). This is undoubtedly true when one compares gallinaceous birds, rails and waders with passerines, but how about the cerebralization of such strikingly nidicolous families as Procellariiformes, Falconiformes, Strigiformes? On the other hand, the nidifugous geese are highly intelligent. A very interesting paper.—M. M. Nice.

## SONG

(See also Numbers 21, 26.)

**47. Inheritance and Learning in the Song of the Chaffinch (*Fringilla coelebs* L.),** Holger Poulsen. 1951. *Behaviour*, 3(3): 216-228. Two male Chaffinches, taken from the nest and hand-reared, were kept in isolation; in September they twittered feebly and at the end of January they sang loudly an "imperfect version of the normal song." In mid-February they were allowed to hear wild Chaffinches and soon learned the proper song. "Thus there is an innate basis for the song and an innate disposition to adhere to and sing the song of the species." The song is "partly innate and partly learnt." Two young males were caught in September after they must have heard adult song; they were kept by themselves and sang the same imperfect song as had the first birds. In May they were placed outdoors where they heard Chaffinch song constantly, but they never learned it, nor did they learn it the following spring. However, Mr. Poulsen wrote me in June 1952 that he now knows "that Chaffinches which have not had any opportunity to learn their right song in the first spring after their birth nevertheless get their normal song the following spring when they hear free-living Chaffinches." The evidence was obtained from two males taken from the nest and two caught when four months old.

With Song Sparrows, *Melospiza melodia*, I found (1943) that males do not inherit their songs from their fathers or grandfathers on either side, nor do they learn them from their fathers. The hand-raised bird D learned his songs in his first fall (September and October) from the older bird, Y.

Mr. Poulsen found that the song is innate in the Reed Bunting, *Emberiza schoeniclus*; Wood Warbler, *Phylloscopus sibilatrix*, and Tree Pipit, *Anthus trivialis*, but acquired in the Linnet, *Carduelis cannabina* and Skylark, *Alauda arvensis*, and partly innate and partly acquired in the Lesser White-throat, *Sylvia curruca*. Injection of male hormone brought male Chaffinches into full song in winter; in females it induced a "twittering, somewhat resembling the sub-song of the male." This question of the inherited basis of song, and when song is learned, is of great interest; Mr. Poulsen's work should stimulate experiments with other species.—M. M. Nice.

**48. Florida Bird Songs.** Produced by P. P. Kellogg and A. A. Allen for the Albert R. Brand Bird Song Foundation, Laboratory of Ornithology, Cornell University, Ithaca, N. Y. Recorded by the Laboratory of Ornithology, except that the Barred Owl was recorded by Jerry and Norma Stillwell. Ten-inch vinylite disk, 78 r.p.m. \$2.50. Ten distinctive Florida birds are heard, including the nuthatch-like call of the Ivory-billed Woodpecker. A brief plea is included for preservation of the specialized habitats necessary to some of these birds. Fidelity of recording and level of record noise are good, comparable to *American Bird Songs, Vol II* (*Bird-Banding* 23: 125).—E. Alexander Bergstrom.

**49. Wild Bird Songs.** Recorded by Jerry and Norma Stillwell, R.F.D. No. 2, Fayetteville, Ark. This series of 15 disks includes four special records on individual species, mostly with some accompaniment by orchestral music, and the main group which is entitled "Songs of Some Wild Birds East of the Rockies." The reviewer has heard only three of the latter group. The records were available from the Stillwells, but are off the market at present.

Ten-inch shellac disks are used, but with narrow margins so that playing time approximates that of a 12-inch commercial disk; all are at 78 R.P.M. These are as quiet and free of surface noises as the vinylite Cornell records, and have at least equal fidelity. It appears that a high-fidelity tape recorder was used, but without the large parabolic microphone used at Cornell. As a result, there is much more background to each song, composed primarily of the songs of other birds; it is a little harder for the beginner to follow the primary singer, but the over-all effect is more lifelike. Individual birds are recorded for up to two minutes and 20 seconds, permitting a wider range of songs and call-notes to be included, and reducing the likelihood that the beginner will assume that a species has only one stereotyped song. Partly because only small paper labels are used, the records will not give satisfactory results on a record-player set for automatic playing. These 15 disks are different from an earlier series of four produced by the Stillwells, who were then hampered by having less adequate equipment available.—E. Alexander Bergstrom.

**50. Notes and Display of the Magpie.** Derek Goodwin. 1952. *British Birds*, 45(4): 113-122. Detailed descriptions of eight notes and five displays of *Pica pica*, illustrated by sketches. The chattering notes are used for alarm and at times anger or protest. "As with the alarm note of the Jay (*Garrulus glandarius*), and probably most other birds, it is chiefly given when the impulse to flee is apparently inhibited by curiosity or aggressiveness."—M. M. Nice.

## BOOKS

**51. Waterfowl and their Food Plants in Washington.** Charles F. Yocum. 1951. Univ. of Washington Press, 272 pp. — This volume is clearly written, excellently illustrated and well printed. It presents a wealth of good tables, photographs, maps and drawings. While it contains many new and interesting facts, much of its material has only local significance. This is in keeping with its avowed objective "to lay the groundwork for future research on waterfowl in Washington." Where it may fall short of this objective is in its failure to discuss the meaning or significance of such subjects as sex ratios, brood counts and food habits.

A survey of the breeding population revealed that 19 species of waterfowl remain to nest east of the Cascades in Washington and that 50 percent of the birds are Mallards. It is unfortunate that the inventory was not made in such a manner

that the results could be expressed in ducks per square mile and thus be comparable with inventories made each year by official agencies in the United States and the Prairie Provinces.

A two-year comparison of duck nest hatching phenology, with special emphasis on the Redhead and the significance of spring flooding, makes a fascinating chapter. But the significance of brood counts as indexes of production have recently been scrutinized with such intensity by so many workers that Dr. Yocum's chapter dealing with this subject will undoubtedly be subject to much criticism among waterfowl biologists. His sampling methods were different each year and he is plagued by the problem of small samples, the hazards due to averages derived in most cases from less than 10 broods of a species for any one age class.

The chapter on sex ratios includes some interesting tables both from the literature and from original work in Washington. That hunters in this state seem to select drakes in their shooting is indicated by the fact that they reported killing 146 male Mallards per 100 females while the author's field counts showed only 109 per 100 females. In other species the author computes and discusses sex ratios from samples of less than 10 birds and reports fall sex ratios for Mergansers and the Golden-eye even though admitting that they could not be sexed accurately in the field at that time.

Hunting Club records dug up by Yocum show how different is the species composition of the harvest in eastern and western Washington and the importance of the Baldpate to the coastal hunter. Other sources of data show the variation between years and with different techniques of sampling. It is clear that hunter success declined about 50% between 1943 and 1947 while the number of hunters was rapidly increasing and bag limits were being reduced. This chapter is really a preliminary survey because it reveals how many things were attempted and how few produced adequate samples.

Chapters on "Parasites" and "Disease" and "Management" present little that is new, venture no discussion of their significance and seem to provide little guidance for future work.

The last chapters of the book deal with the food habits and the food and cover plants of waterfowl. This is by far the longest and most thorough section of the book. It not only includes keys and distribution maps for all the species in Washington but also provides plates of excellent drawings by the author of the diagnostic parts of each plant species.

Dr. Yocum and the University of Washington Press have produced a readable and attractive book, making no false claims to being a monograph, but rather presenting, in stiff covers, a progress report on the status of waterfowl, their foods, and their hunting in the state of Washington. That all such progress reports should be published seems doubtful but, to date, we have suffered from no such plethora.

Let us hope that all states can get their waterfowl information into as readable condition as Yocum has done for Washington, but that they will allot more space to interpretation of the significance of their findings.—Wm. H. Elder.

**52. New Findings Concerning the Food Habits of Birds of Prey.** (Neue Ergebnisse über die Ernährung der Greifvögel und Eulen). Otto Uttendörfer. 1952. Eugen Ulmer, Stuttgart/z.Z. Ludwigsburg. 230 pp. DM 12 (about \$3.00). — With the able assistance of Drs. G. Bodenstein and R. Kuhk, Dr. Uttendörfer has produced an outstanding monograph which contains mostly new material, but in part duplicates Uttendörfer's "Die Ernährung der Deutschen Raubvögel und Eulen" (J. Neumann-Neudamm, Berlin 1939). This book is not merely a compendium of raptor food habits, but a scholarly and extensive study of many of the ecological interrelationships of birds of prey. Comparative food lists and methods of hunting of raptors in different parts of their ranges, not only in Europe, but also in other parts of the world are discussed in detail. The relationships of different species of raptors to each other and to prey species especially during the nesting season are handled in a masterly manner. There are several references to accelerated raptor reproduction in good food years.

The bulk of the book is composed of a discussion of each species of raptor taken up in turn. As there was considerable time lapse between the completion of the manuscript and its publication, additional information, following the same pattern, has been added toward the end of the book (as well as a supplementary bibliog-

raphy covering this material). There is also a "last minute" bibliography chiefly limited to citations. These three bibliographies cover about 14 pages. Indices for predators and prey species are separated and conveniently arranged. There are a few references to falconry, and some very interesting material on fossil owl pellets is given. The presentation of newer concepts on predation and the good coverage on American species makes this an important reference work even for those whose interest is primarily limited to our native fauna.

There is no section on techniques. The recognition of sign-reading ability permeates the entire book, making it not only exceedingly readable, but also giving the reader a chance to evaluate the data for himself. The authors are well aware of the difficulties of ascertaining whether or not one is recovering a *representative* sample of prey items, i.e. the discrepancy between what the raptor has killed and/or eaten and what the observer has been able to find. Discrimination and precision have been used in presenting food lists, and the numbers of individuals of each prey species are consistently enumerated. Where quantitative material has been available, such as gram intake of prey or number of pellets analyzed, these data have been presented with sufficient completeness to make it possible for the reader to attempt geographic, temporal or interspecific comparisons. It seems a pity that so many workers — even within the last few years — are gathering pellets without counting them, thereby passing up the most easily available opportunity for one sort of comparative, quantitative measurement.

Considerable attention has been paid to the status of the European birds of prey and the factors limiting them. For example, the estimated Horned Owl, *Bubo bubo*, population for Germany in 1934 (quoting Schnurre) was 101 pairs! Flying into wires is listed as a source of alarming mortality among Horned Owls in some European regions. Man-made pressures, direct or indirect, are obviously reducing the populations of certain raptors on both sides of the Atlantic. It is interesting to note that the German ornithologists are proposing the same type of euphemisms in referring to birds of prey that we are, in order to facilitate conservation and a more tolerant attitude on the part of the public. Thus the term "Greifvögel" has been substituted for "Raubvögel" in the same spirit as "Peregrine" is preferred by many in this country to "Duck Hawk." In each case, it is an attempt to get rid of a name which is either misleading or in poor repute by giving an earlier name priority.

In addition to the voluminous amount of data presented from the literature and to their more recent findings in the supplement, the authors give 345,626 vertebrate prey items on which they have made the determinations themselves prior to 1947. The authors concluded that no closely related forms of Central European raptors are in direct competition for food. Either they occur in different habitats, or are so different in size and hunting methods, that their principal prey species are not the same.—Frances Hamerstrom.

**53. Understanding Heredity.** Richard B. Goldschmidt. 1952. John Wiley and Sons, New York. ix + 228. \$3.75. This book is revealingly subtitled "An Introduction to Genetics." Dr. Goldschmidt has tried to bridge the gap between the textbook and popular approach to this increasingly important field of biology. The format and organization are both excellent for achieving this end. The author treats successively: hereditary and non-hereditary traits, sex cells and fertilization, elementary Mendelism, chromosomes and linkage, mutation, sex-linkage, interaction of genes and some of the more technical facts and problems in genetics.

The jacket flap indicates that this is the "... book that will help you find the rule or process behind your Roman nose, your blue eyes or your very short index finger—..." The basic principles that lie behind the patterns of inheritance of these variations are adequately treated, but the book is not recommended as a source of information dealing with specific variations in man. Dr. Goldschmidt has called upon the tried and true examples (*Drosophila*, beans, chickens, mice, etc.) to illustrate the various principles of inheritance. A small but well thought out group of problems, a list of suggested readings and a short glossary are included.

The author has had another aim in presenting this book at this time. The debate between the followers of Mendel (Non-Communist) and Lysenko (Communist) has become quite heated at several times during the last few years. Dr.

Goldschmidt hopes that with wider dissemination of facts the "... sham of the so-called new biology ..." will stand revealed.

The text is written in non-technical language for the most part and in easily readable style. The author has not felt that documentation of factual material was compatible with this treatment and a few critical readers will object to the omission of a bibliography. The index is totally inadequate, which is the book's only serious flaw.

Dr. Goldschmidt's book holds no special interest for the ornithologist as such. On the other hand all ornithologists should be familiar with the principles of inheritance which he discusses.—J. C. Dickinson, Jr.

**54. Wild Life in the Subantarctic.** By J. H. Sorensen. 1951. Whitecombe & Tombs, Ltd. Christchurch, N.Z. 85 pp. A fascinating account for the general reader of the birds and mammals observed by the writer in five years spent on coast-watch on Campbell Island, 600 miles south of New Zealand. Relations of these creatures to each other and to their environment are described, as well as the great and continuing damage done by the introduced animals — pigs, sheep, rabbits, cats and rats. It is only Adams Island off the Auklands that has escaped and where the gorgeous native flowering plants still abound. The chief birds described are Southern Skua, Giant Petrel, several Albatrosses, and Rockhopper Penguin. The photographs of seals, sea elephants, and these birds are notable.—M. M. Nice.

**55. The Behaviour of the Great Tit (*Parus major*) and Some Other Related Species.** R. A. Hinde. 1952. Leiden. E. J. Brill. 27 guilders. 201 pp. A remarkable example of comparative ethology prosecuted according to the objective method. Based on 1,500 hours of intensive field work over a year and a half, it is an outstanding contribution to our knowledge of bird behavior. The tits were trapped in winter with sheep's fat as bait; all were given two or three colored bands so individuals could be distinguished at distances of 30 yards. Wing measurements of first-year males are smaller than those of older males.

The behavior of all *Parus* species is very similar, the chief differences being in song and call notes and in ecological preferences. Most of them flock in winter; all nest in cavities; displays are much alike; females build, incubate and brood; males feed their mates; both feed the young.

The mechanism of flock organization in the Great Tit is analyzed; there are no leaders and there is no defence of the flock range. Movements are integrated largely by the *twink* call which a bird gives before flying to a new location, and by the *tsit* calls which hold the flock together while the birds are feeding. Winter fighting is usually over food, occasionally over roosting sites. "Fighting usually consists largely of display," p. 21.

"Some birds are paired during the winter, but most pair formation takes place when the flocks break up. The mechanism is not yet fully understood, but it appears to depend on the fact that the female may evoke both aggressive and courting behaviour in the male. The male makes supplanting attacks on other members of the flock, and his further behaviour depends on that of the attacked individual," p. 186. The males spend much time watching over their mates. Pair formation is not interpreted in terms of sexual dominance. The only mention of dominance between members of the pair comes under "Behaviour of the Pair": "At first the male is usually dominant to the female, and occasionally bursts of aggressiveness . . . may occur. . . . After nest-building has started, the female usually dominates the male, especially near the nest-site," p. 46.

Territory establishment is a gradual affair, taking place after pair formation. "The reproductive fighting of the titmice is directed primarily against individuals of the same species. From time to time, however, individuals of other species are attacked: such attacks are presumably due to the release of fighting behaviour by a normally inadequate stimulus at a time when the threshold of the reaction is unusually low," p. 60. Song keeps the pairs together and warns off other males. Female titmice sing to some extent. "Thus the nervous mechanism necessary for singing is present in both sexes, but there are great differences in the strengths of the motivational factors," p. 69.

"Reproductive fighting occurs in relation to the defence of a female, a territory and a nest-site. The most important behaviour patterns are: (i) The supplanting attack. (ii) The head-up posture. (iii) Upright flight, and (iv) Displacement pecking." It is assumed that "each of the combatants is activated by two drives—a fighting drive and an escape drive." The first is expressed primarily in the supplanting attack, the second in fleeing. "In a skirmish the two drives are in approximate equilibrium." "In the Great Tit the head-up posture is very elaborate, and is accentuated by a black ventral stripe. In the Blue Tit the posture is less elaborate and there is no corresponding structure," p. 187.

In the fall, late winter and early spring male titmice inspect holes and their display incites their mates to do likewise. While looking at the hole the male Great Tit "turns his head round so that the white cheeks are exposed to the female"; later he enters the hole and pokes his head out of and back into the entrance. One wonders whether the white cheeks of *Parus* species, and white nape patches of some, and the crests of *Baeolophus* species might have evolved in connection with nest-hole inspection.

While incubating the female spends about 30 minutes on the nest and 8 minutes off. In feeding the young the male usually takes a larger share than his mate. Young leave at about 18 to 20 days and are cared for another 2 to 4 weeks by adults, but after the first week broods may become mixed. Young may start fighting each other 17 days after fledging. With one exception Great Tits showed no response to the approach of the introduced Grey Squirrel, although it takes some eggs and young of titmice. In response to an avian enemy in flight, titmice take cover with a special alarm note; a perched hawk or owl is scolded in much the same way a human intruder is treated.

Further chapters are devoted to "relations between the forms of aggressive behaviour," "roosting and awakening," and "Periodic variations in the frequencies of instinctive activities." It is a great pity that a paper of such fundamental importance should be so expensive—about \$7.50.—M. M. Nice.

**56. King Solomon's Ring. New Light on Animal Ways.** Konrad Z. Lorenz. 1952. With a foreword by Julian Huxley. Translated from the German by Marjorie Kerr Wilson. New York. Crowell. \$3.50. 202 pp. This is a wonderful book on animal behavior, written with charm and spirit and humor, full of engrossing stories that are all true. Dr. Lorenz's deep sympathy with animals from water beetles to apes and his clear insight into their behavior are apparent on every page. We read amazing stories of the love life and family care of fishes, of the extraordinary adaptations of water shrews, of the characteristics of the two strains of domesticated dogs, and of the complicated social responses of Jackdaws—a most important contribution to ornithology. In the July 1950 *Bird-Banding*, p. 137, I reviewed the German edition of this book; the chief difference in the contents between the two is that the chapter on Grey Geese has been replaced by one on water shrews. The telling and humorous sketches in the present version are a great addition. This is a book for all animal lovers and all students of animals; it will delight and instruct them. Dr. Lorenz writes: "I am a scientist . . . and my only chance of writing something not entirely devoid of charm lies in strict adherence to scientific fact. Thus, . . . I may hope to convey, to my kindly reader, at least a slight inkling of the infinite beauty of our fellow creatures and their life."—M. M. Nice.

**57. Birds in Color.** (Fåg'arna i Färg). Sigfrid Durango. 1952. Hugo Gebers Förlag. Stockholm. 221 pp. A most attractive and useful little book. The first 128 pages are devoted to excellent colored plates, two species to a page, by Karl A. Tinggaard. The text gives brief descriptions of plumage, song, distribution in Sweden, nesting site, number and color of eggs, share of parents in incubation, and its length, season in Sweden, winter quarters and food—an amazing amount of information in small space. The incubation periods are the best I have yet found in any book; there is only one slip—17 days for the Dunlin, *Calidris alpina*, instead of 22 (Evans, *Ibis*, 1891). The owls incubate from 26 to 34 days, Falconidae from 28 to 45. Share of parents in incubation seems to be correctly stated except with the Nutcracker, *Nucifraga caryocatactes*, where both sexes are said to participate. Both the German and British Handbooks say it is carried out by the female alone as in the other Corvidae.—M. M. Nice.

**58. Check-list of North American Birds and Synopsis of the North American Mammals.** J. E. Keays. 1952. London Typesetting Company, London, Ontario. 55 pp. \$1.50. One must look twice at the publication date to reassure himself that this Check-list was actually published in 1952 and not 1902. The title page states that the bird list was condensed and compiled from the A.O.U. Check-List, fourth edition, 1931. This is true of the nomenclature, but the eight supplements to the A.O.U. Check-List that have appeared since 1931 are ignored, and the sequence of orders, families, and most of the species is apparently that of the second (1895) edition. Among the exceptions to any known sequence are *Passer domesticus* and *Passer montanus* which are placed in the Icteridae between the meadowlarks and the orioles. No explanation is given for this or for the many other departures from the standard usage of current authority. In some instances subfamily and even generic names are used for family names, and the number of misspellings is incredible. Annotations on the birds are few, but in his few comments the compiler gives such erroneous impressions as that there have been no reports of the Eskimo Curlew since 1926 or of the California Condor since 1931, and that the Trumpeter Swan is close to extinction. The synopsis of North American mammals (pp. 39-55) is equally out of date and inaccurate.—W. Earl Godfrey.

#### NOTES AND NEWS

*Time* for July 14, 1952, chronicled the journey of a Manx Shearwater (*Puffinus puffinus puffinus*) westward across the Atlantic to Boston in a plane with Mr. Rosario Mazzeo, then eastward on its own wings, covering almost 3,300 miles at an average speed of about 250 miles a day. This shearwater was from the colony at the Skokholm Bird Observatory, on an island off South Wales. No shearwater had previously returned to Skokholm from such a distant release point, although some had returned from Venice. We will look forward to a detailed account of this shearwater banding, in the annual report of the Skokholm Bird Observatory and probably in *British Birds*.

Although about 75 copies have been disposed of already, requests for *Trapping Methods for Bird Ringers*, Field Guide Number One of the British Trust for Ornithology, continue to arrive. This was reviewed in *Bird-Banding*, **22**: 35-36. A few copies are still available from the editor at 40¢. Requests have also been received for copies of *Nestboxes*, Field Guide Number Three, which is reviewed in this issue. For the convenience of North American readers, a few copies of that guide have been secured and may be obtained from the editor at 40¢.

*Erratum*: in the July, 1952 issue, p. 115, read "southwesterly" instead of "southeasterly" as the direction of migration of Swedish Ospreys.