

## RECENT LITERATURE

(Reviews by Margaret M. Nice)

The articles have been selected and arranged under subjects of importance to students of the living bird and also for the purpose of suggesting problems or aspects of problems to those banders who wish to make the most of their unique opportunities.

Headings in quotation-marks are the exact titles of books or articles or literal translations of such titles. Other headings refer to general subjects or are abbreviated from titles in foreign languages. References to periodicals are given in italics.

## BANDING AND MIGRATION

**Banding in North America** *Bird-Banding Notes*, 2, No. 13, Aug., 1935, gives the summary of the fiscal year: 249,829 birds were banded, bringing the grand total for the last fifteen-years to 1,906,455, the total of returns reaching 117,685. There are between 1900 and 2000 coöperators, 59 of whom banded over a thousand birds each. The ten birds of which the largest numbers were banded were: Common Tern (*Sterna hirundo*) 22,315; Junco (*Junco hyemalis-oreganus* group) 15,486; Pintail (*Dafila acuta iztzihoa*) 15,177; Mallard (*Anas p.; platyrhynchos*) 14,947; White-throated Sparrow (*Zonotrichia albicollis*) 11,102; Herring Gull (*Larus argentatus*) 9,974; Chimney Swift (*Chaturra pelagica*) 8,440; Song Sparrow (*Melospiza melodia*) 7,563; Robin (*Turdus migratorius*) 7,009; Starling (*Sturnus vulgaris*) 6,064.

"The 'British Birds Marking Scheme'. Progress for 1934."—H. F. Witherby. 1935. *British Birds*, 18,302-305. During the past year 49,651 birds were ringed, of which 36 per cent were trapped. Sixteen coöperators ringed over a thousand birds each, three of them ringed over 3000 and one over 5000. A valuable table is given of the numbers of each species ringed from 1909-1934, and the numbers of each recovered. Percentages of some small Passerines are high—Redbreasts 7.8, Titmice 13.6 and 18.7, doubtless owing to trapping. Other high percentages of recoveries must be due to shooting: 7.0 and 7.8 per cent for Carrion Crow and Raven, 9.8 to 13.4 per cent for four species of Ducks, and 13.2 to 24.8 per cent for four species of Hawks.

"Observations on Times of Feeding."—George Marples. 1935, *British Birds*, 29,45-49. Interesting observations on the times of first and last visits morning and evening to the feeding-shelf of Great and Blue Tits and other species.

"Pole Traps for Taking Birds without Injury."—Vernon Bailey, *Bird-Banding Notes*, 2, No. 13, August, 1935. A description of the Verbaile Foot-hold trap which is provided with a wire spring and a fine, flexible chain that is thrown up in a loop (or knot) around the legs of the bird, to hold it without injury or pain." By means of this trap birds of prey and other large perching birds can be captured, banded, and removed to a distance (ten or twelve miles) from which they are unlikely to return. The traps can be made by any one for his own use or purchased from the Humane Trap Company, 807 District National Bank Building, Washington, D. C., for 75 cents to \$1.00 each. This is an important step in advance.

"Banding Technic."<sup>1</sup>—Traps and nets of many kinds are figured and described, and different baits discussed.

"Communication between Ornithological Stations".<sup>2</sup>—The importance of educating the public as to the existence and purposes of banding is stressed; by means of posters and instruction in school interest in birds will be aroused and the return of bands facilitated.

**Migration of the European Quail.**<sup>3</sup>—A long and detailed paper with graphs and maps giving the results of five years' study at Castel Fusano near Rome. The Quail migrate northeast from Tunisia to Castel Fusano, some of them continuing to the Adriatic and across it, banded birds having been taken in

Dalmatia, Roumania, and Russia. Birds are retaken at Castel Fusano one, two, and three years after banding, showing that individuals use the same routes year after year. The spring migration lasts from the end of February through July; first come males, then females and after that—in late May and June—curiously enough, females with incubation patches, showing that they have already bred in Africa, while in June and July their young follow.

**Migration Speed of a Turnstone.**<sup>4</sup>—A Turnstone banded at Helgoland on the night of September 4-5, 1934, and released the following morning at 11, was shot 25 hours later in France, 492 miles away, the band being returned to the Voglewarte. There had been very little wind during the flight.

<sup>1</sup> Berungungs-Technik. Merkblatt über Fangverfahren für den Beringer. Vogelwarte Helgoland, Rossitten, and Sempach. 1935. *Vogelzug*, 6, 138-152.

<sup>2</sup> *Vogelzug*, 6, 172-175.

<sup>3</sup> Chigi, F., A. Agostini, and M. Rotondi. 1935. La Migrazione della Quaglia *Coturnix coturnix coturnix* (L.). *Rassegna Faunistica*, 2, 1-67.

<sup>4</sup> Drost, R. 1935. Hohe Zuggeschwindigkeit eines Steinwältzers, *Arrearia i. interpres* (L.). *Vogelzug*, 6, 132.

### HOMING EXPERIMENTS

**"Homing Experiments with Starlings, 1934."**<sup>5</sup>—Very important work is being done in Germany on the subject of distant orientation in birds. The present paper describes in detail the remarkable results of the 353 experiments in which nesting *Sturnus v. vulgaris* were sent to Berlin by 35 coöperators from all portions of Germany from distances of 26 to 280 miles; the birds were fed, watered, furnished with colored bands, and released in a park. One hundred and twenty were known to have returned, although doubtless many more came back to their homes but were driven off by the birds that had taken their places.

A smaller percentage of females returned to their nests than of males—25 per cent in contrast to 35.3 per cent. The birds returned the same day from distances up to 60 miles, the next day from 60 to 120 miles, on the second day after from 120 to 180 miles, and on the third day from 180 to 240 miles. Despite this slow return, Dr. Rüppell believes that the birds started in the right direction when released and that they did not fly about at random until reaching familiar territory but went fairly directly home. There is no evidence that the Starlings lost their way as do many homing pigeons. Direction had no influence upon percentage of returns, nor upon speed of returns. With homing pigeons the longer the distance, the fewer the returns, but this relationship did not hold in the same degree with the Starlings.

Dr. Rüppell considers that the situation of these experimental Starlings is much the same as that of a spring migrant, *i. e.* that these breeding birds on being removed to a distance were suddenly thrown back into the migratory stage, for only in the home locality does the migratory urge disappear. This view does not, however, explain the return of birds when removed from their winter quarters (see E. L. Sumner, Sr., 1933. *News from the Bird-Banders*, 8, 40-43). This important paper concludes with a discussion of the theoretical bearings of the findings, and a bibliography giving references to most of the authors cited.

Such experiments demand careful planning and coöperation between many workers. They could hardly be carried out in America with Starlings unless investigators put up nest-boxes with this purpose in view, but Tree Swallows would seem to be well adapted for such studies.

<sup>5</sup> Rüppell, W. 1935. Heimfinderversuche mit Staren, 1934. *Journal für Ornithologie*, 83, 462-524.

### CENSUSES

**"A Study of the European Starling."**<sup>6</sup>—A very interesting study of a flock of 32,000 *Sturnus v. vulgaris* in eastern Ohio, both their flocking radius and their roosting behavior. Evidence is presented of serious competition for food between the Starling and native birds.

**"A Preliminary List of the Breeding Birds of Ohio."**<sup>7</sup>—A valuable coöperative project of mapping the breeding birds of the State by counties, the

plan being eventually to publish "a series of maps indicating the exact breeding distribution of each species with an analysis of the factors determining the same."

**Rookeries and Roosts of Corvidae in France.**—Various types of roosts of Crows and Jackdaws are classified and mapped in the first paper,<sup>6</sup> while migration-routes of migrating Crows are discussed and 1010 rookeries—i. e. nesting colonies of Rooks (*Corvus frugilegus*) are mapped in the second.<sup>9</sup>

**Censuses in England.**—The English are giving a splendid example of coöperative effort in a number of recent papers on censuses, most of them undertaken by the British Trust for Ornithology. Swallows and Martins<sup>10</sup>, Partridges<sup>11</sup> and Herons<sup>12</sup> have been reported on, while populations of woodlands<sup>13</sup>, and heaths and moorland<sup>14</sup> have also been studied. "From 20 to 100 adults per 100 acres were the most usual figures for the breeding density" in this last habitat. The census taken for seven years on Skokholm<sup>15</sup> is particularly valuable; the population of "heathland" species—birds that feed and breed exclusively on a heathland area—remained remarkably constant, ranging between 105 and 112 pairs to the 220 acres, averaging 109. Besides this population of 99 birds per 100 acres, "Skokholm is occupied in summer by tens of thousands of gulls, auks, and petrels, which breed, not only along the coastal acres but also upon every inland acre of the island. In spite of this immense incursion of oceanic species the number of heathland breeders (even if for the moment we do not include the Oyster-catchers) is well up to the average shown in Lack's tables. It may, therefore, be assumed that the presence on a heath of large numbers of birds which obtain their food from the sea, leaving the fauna and flora practically untouched, has no direct influence on the numbers of heathland feeding and breeding birds."

A large proportion of unmated males was found among Nightingales (*Luscinia m. megarhynca*) in an area of 2000 acres in Gloucestershire, from 1932 to 1934 there being 4-5 unmated cocks to 2-3 pairs, in 1935 their being 5 of the former and 7 of the latter.<sup>16</sup>

<sup>6</sup> Hicks, L. E. and C. A. Damroch. 1935. *The Cardinal*, 4, 25-30.

<sup>7</sup> Hicks, L. E. 1935. *The Redstart*, 2, No 7.

<sup>8</sup> Chappellier, A., and J. Dalmon. 1933. Les Dortoirs de Corbeaux. *L'Oiseau et La Revue française d'Ornithologie*, No. 2, 379-385.

<sup>9</sup> Chappellier, A. 1934. Recherche des Points et Voies de Pénétration en France des Corbeaux Migrateurs. *Revue des Eaux et Forêts*, Fév., 94-113.

<sup>10</sup> Boyd, A. W. 1935. Report on the Swallow Enquiry. 1934. *British Birds*, 29, 3-21.

<sup>11</sup> Middleton, A. D. 1935. The Population of Partridges (*Perdix perdix*) in 1933 and 1934 in Great Britain. *Jour. Animal Ecology*, 4, 137-145.

<sup>12</sup> Nicholson, F. M. 1935. An Index of Heron Population. *British Birds*, 28, 332-341.

<sup>13</sup> Elton, C. 1935. A Reconnaissance of Woodland Bird Communities in England and Wales. *Jour. Animal Ecology*, 4, 127-136.

<sup>14</sup> Lack, D. 1935. The Breeding Bird Population of British Heaths and Moorland. *Jour. Animal Ecology*, 4, 43-51.

<sup>15</sup> Lockley, R. M. 1935. A Census over Seven Years, on Skokholm, Pembrokeshire. *Jour. Animal Ecology*, 4, 52-57.

<sup>16</sup> Price, M. P. 1935. Census of Nightingales in Gloucestershire. *British Birds*, 29, 81-83.

### LONGEVITY

Several records of interest are given in *Bird Banding Notes*, 2, No. 13, August, 1935: a Redhead (*Nyroca americana*) of at least twelve years; a Black-crowned Night Heron (*Nycticorax n. hoactli*) of at least ten, a Herring Gull (*Larus argentatus*) nearly eleven, a Red-headed Woodpecker (*Melanerpes erythrocephalus*) of eleven, a Meadowlark (*Sturnella magna*) of eight and one half, a Blue Jay (*Cyanocitta cristata*) of at least nine, and a Junco (*Junco hyemalis*) of eight years. These records would be of greater value if the age of the bird at banding were indicated.

A Starling at least ten years old is reported as recovered where ringed in Eton, England.<sup>17</sup> Herring Gulls nearly twenty-five and twenty-six years old are recorded from Rossitten<sup>18</sup>, while another *Larus argentatus* has lived thirty-five years in captivity, having been in adult plumage when rescued from stone-throwing boys.<sup>19</sup>

<sup>17</sup> Recovery of Marked Birds. 1935. *British Birds*, 29, 51.

<sup>18</sup> Schüz, E. 1935. Silbermöwen (*Larus a. argentatus*) fast 25 und fast 26 Jahre alt! *Der Vogelzug*, 6, 134-135.

<sup>19</sup> Ritchie, J. 1935. Great Age of Herring Gull. *Scottish Naturalist*, May-June.

### WEIGHT

"On Pink-footed Geese."—G. H. C. Haigh, 1935. *British Birds*, 28, 367-369. Weights of 337 *Anser brachyrhynchos* in the fall ranged from four to eight pounds, the majority falling between six and six and one half pounds. "To a certain extent weight seems to depend on age; the very light weights being usually young birds in early autumn, while the very heavy birds always show signs of old age. In a season in which food is abundant all are slightly heavier."

### LIFE-HISTORY

"Helpers at the Nest."—A. F. Skutch, 1935. *The Auk*, 52, 257-273. A very interesting account of non-parents helping parents feed young in three species in Central America. The Central American Brown Jay (*Psilorhynchus mexicanus cyanogenus*) does not become mature until two years of age; at five nests from one to five yearling birds were in attendance bringing food to the nestlings and guarding them. With the Black-eared Bush-Tit (*Psaltriparus m. melanotis*) males outnumber females "by four or six to one." Extra males assist in nest-building and in feeding the young, from one to three at each nest. All twelve of the nestlings from three nests turned out to be males. At a nest of the Banded Cactus Wren (*Heleodytes z. zonatus*) the mother brooded the young while the father and a helper did all the feeding; at another nest there were at least two helpers. It would be of great interest to know whether these "helpers" are young of former broods; for such problems banding is indispensable.

Other recent records of more than two birds to a nest involve Storks, where three birds built, incubated, and fed the young, the author believing the extra individual to be a young bird from a previous brood;<sup>20</sup> and Long-tailed Tits (*Agithalos c. roseus*) where three birds fed "about twenty" young in one nest<sup>21</sup>, while a male Great Tit (*Parus major newtoni*) had two mates in two separate nests.<sup>22</sup>

"On the Habits of Kingfishers."<sup>23</sup>—An interesting report on the nesting-habits of *Alcedo atthis isipida* in England. Both parents excavate (the cock being the main worker), both incubate and feed the young. Incubation lasts 19-21 days, fledging 23-26 days, although in one exceptional case it lasted 37 days. From 69 eggs laid in 10 nests 55 young were fledged—79.7 per cent of success. As to territory: "In instances where the breeding pairs are reasonably apart little attention is paid to territorial rights as the greatest portion of the fishing for the young is done about one hundred to two hundred yards from the nest. On the other hand, where the breeding pairs are closely packed, as illustrated in the 'Overcrowding' map, fighting is frequent, but this is not always the case. Three occurrences of eggs being destroyed by rival pairs were noted."

"Distribution and Number of the Dipper on the North and South Esks (Midlothian)."<sup>24</sup>—*Cinclus c. gularis* was found to be territorial both winter and summer; in the former season "more than half the number of birds seen were paired." The normal clutch is 5 eggs, with 4 not uncommon; the average brood of half-fledged young was 3.8, but "the mortality incidence was highest . . . immediately after the young had left the nest."

"Notes on the Tree-Sparrow, 1934."<sup>25</sup>—A. W. Boyd gives a further report on the colony of *Passer m. montanus* on his grounds in Cheshire. "Out of 64 clutches only 42 broods came to maturity—65.6 per cent."

"Efficiency of Nesting of the Tree Swallow."—W. Weydemeyer, 1935, *The Condor*, 37, 216-217. During eight years in Montana in 60 nests of *Iridoprocne bicolor* 363 eggs were laid and 340 young raised, 93.7 per cent of success.

"A Study of the Nesting and Family Life of the Red-throated Loon."<sup>26</sup>—Observations on *Gavia stellata* on the North Shore of the Gulf of St. Lawrence. From twelve nests in 1934 only three young birds were raised, owing largely to depredations by the Great Black-backed Gull (*Larus marinus*). The authors believe the damage must have been unusually heavy this year because of "the fact that the natural food (fish) for gulls was so scarce that at least seventy-five per cent of their young starved to death."

**Observations on Mute Swans.**<sup>27</sup>—A very interesting résumé of population fluctuations among wild *Cygnus olor* on Lake Guja in East Prussia. The first pair came about 1893, ten years later there were about one hundred pairs, at which figure the population stood until 1914. From 1919 to 1927 almost all the birds were killed by hunters; in 1928 there were eight pairs, but after the severe winter of 1928-29 only one pair remained. Since 1930 under protection the pairs have increased to 28. The old males are so tyrannical that at first the young birds could not nest, but as their numbers increased they were able to build nests near one another and as far as possible from the old birds, which were then forced to reduce the size of their far-too-large territories. These Swans are much more prone to fight than the semi-domesticated ones described by Selous in "Evolution of Habit in Birds," which merely threatened each other; on Lake Guja they sometimes injure each other so badly that death through freezing results, and occasionally a strong male drowns a weaker one. Some Swans die of old age; they are usually in fine plumage, but too thin and weak to make the fall migration. The start of nesting depends on the melting of the ice; pairs in open places will have full sets before others whose sites are frozen have started with nest-building. The drought of 1934 enabled foxes to reach many nests and destroy the young.

"**The Thrushes of our Woods,**" L. B. Gillet, 1935. *Yale Review*, 24, 743-759. A charming appreciation of American Thrushes, dealing particularly with the beauty of their songs.

"**Notes on the Growth, Behavior and Taming of Young Marsh Hawks,**" L. O. Shelley, 1935. *The Auk*, 52, 287-299. Interesting data on *Circus hudsonius*.

<sup>26</sup> G. Hoffman. 1935. Drei Störche auf einem Horst. *Ornith. Monatsber.* 43, 120-121.

<sup>27</sup> P. V. Dodd. 1935. Three Long-Tailed Tits at one Nest. *British Birds*, 29, 80.

<sup>28</sup> G. B. Gooch. 1935. A Great Tit Triangle. *British Birds*, 29, 78-79.

<sup>29</sup> P. A. Clancey. 1935. *British Birds*, 28, 295-301.

<sup>30</sup> William Searle, Jr., and D. Bryson. 1935. *British Birds*, 28, 327-331.

<sup>31</sup> *British Birds*, 28, 347-349.

<sup>32</sup> R. A. and H. S. Johnson. 1935. *Wilson Bulletin*, 47, 97-103.

<sup>33</sup> W. von Sanden. 1935. Beobachtungen an dem Schwanenbestand des Nordenburgersees in Ostpreussen seit seiner Beseidlung mit *Cygnus olor*. *Ornith. Monatsber.* 43, 82-85.

## TERRITORY

"**Feeding Habits of the Black-bellied Plover in Winter.**"<sup>28</sup>—On the beach at La Jolla, California, each *Squatarola squatarola* "claimed and held for his very own a strip of perhaps a hundred yards. No other Black-bellied Plover was permitted to encroach, but shore-birds of other species were allowed to forage freely." If a neighbor "comes into his domain" he "ruffles his neck feathers, crouches into a belligerent attitude and trots toward his enemy as though to butt him from the premises. His bluff always seems to work, as no blows are ever struck."

"**The Spring Rivalry of Birds.**"<sup>29</sup>—C. B. Moffat's interesting paper published in the *Irish Naturalist* in 1903 and mentioned in these reviews (July, 1934, p. 143) has been reprinted this past year. The author believes that the chief use of territory is to prevent the undue increase of any species by preventing the less vigorous individuals from breeding; the chief use of song is advertisement and bright plumage is a "sort of warning colouration."

"**Territorialism and Sexual Selection.**"<sup>30</sup>—Written in 1922 before the author had seen Howard's "Territory in Bird Life," this brief paper in a little-known journal gives the main points of the territory theory, emphasizing particularly the function of warning colors in the proclamation of territory. "The purposes fulfilled by territorialism are one or both of the following, (1) the conservation of a food supply, (2) the jealous reservation of the female partner or partners." Brilliant colors serve instead of fighting, since "observation shows that the morale bestowed upon the possessor by settled possession of territory appears among birds to be irresistible."

**Biology of the Sky-Lark.**<sup>31</sup>—The authors observed no territorial combats

between male *Alauda a. arvensis*. "The only rivalry between the males is competition in singing."

Other observations on territory will be found in references 23, 24, and 27.

<sup>28</sup> C. W. Michael. 1935. *The Condor*, 37, 169.

<sup>29</sup> *The Irish Naturalists' Journal*, 1934, 5, 84-87, 115-120, 155-156.

<sup>30</sup> A. H. Hamer. 1922. *S. African J. Nat. Hist.*, 3, 54-59.

<sup>31</sup> E. Lebeurier and J. Rapine. 1935. *L'Oiseau et la Rev. franç. d'Ornithologie*, 5, 258-283.

### PHYSIOLOGICAL EXPERIMENTS

"The Influence of Environmental Temperature on the Utilization of Food Energy in Baby Chicks."<sup>32</sup>—Careful experiments on baby chicks under specially controlled conditions showed that the "daily rate of growth increased with decreasing environmental temperature" and the "amount of food consumed increased in proportion to the decrease in temperature." "At extremely low environmental temperature all the energy which an animal is able to absorb is used as heat for maintaining the body temperature at a constant level; at extremely high outside temperature theoretically the animal's appetite is decreased to such an extent that the energy intake does not exceed the maintenance requirement."

"Failure of Theelin and Thyroxin to affect Plumage and Eye-color of the Blackbird."<sup>33</sup>—Injections of the female hormone and thyroxin failed to modify the color of the plumage and of the iris of the male Brewer's Blackbird.

"Seasonal Changes in the Histological Structure of the Thyroid Gland."<sup>34</sup>—Detailed studies at different seasons of the year of the thyroids of *Passer domesticus*, *Erethacus rubecula*, *Emberiza citronella*, and *Passer montanus* gave evidence that this gland was particularly active during the molt and migration.

"Erythrocytes and Hemoglobin in the Blood of some American Birds."<sup>35</sup>—Counts of red blood cells were made of a number of birds that had been caught for banding; the median of 83 counts of the Passerines was 5,230,000 per cubic centimeter of blood, and of one species of Gallinaceous bird (Bob-white) 3,532,000.

<sup>32</sup> M. Kleiber and J. E. Dougherty. 1934. *Jour. General Physiology*, 17, 701-726.

<sup>33</sup> C. H. Danforth and J. B. Price. 1935. *Proc. Soc. Exp. Biol. Med.*, 675-678.

<sup>34</sup> W. Küchler. 1935. Jahreszyklische Veränderungen im histologischen Bau der Vogel schilddrüse. *Journal für Ornithologie*, 83, 414-461.

<sup>35</sup> L. B. and M. M. Nice and R. M. Kraft. 1935. *Wilson Bulletin*, 47, 120-124.

### PARASITES

"Notes on the Infestation of Wild Birds by Mallophaga."—R. M. Geist. 1935. *Ohio Jour. Science*, 35, 93-100. A total of 1025 birds of 9 orders collected in Ohio were examined by the author; of the first 8 orders 178 of 315 birds (56.5 per cent) were infested. In the gregarious species infestation reached 61 per cent, in non-gregarious 41. "In the Passeriformes the Hirundinidæ, Corvidæ, Laniidæ, Sturnidæ, Vireonidæ and Icteridæ show the heaviest infestation." Of 710 Passerine birds 292 were infested (41 per cent). As to Cowbirds (*Molothrus a. ater*), 71 of 155 birds were infested with five different species of Mallophaga.

"Parasite on Robin and Great Tit."—G. Marples, 1935. *British Birds*, 28, 311. *Ornithomyia avicularia*, the hippoboscoid fly that often occurs on passerine birds in this country, was found on every one of thirty Robins (*Erethacus r. melophilus*), but on only one other species—one specimen on a Great Tit (*Parus m. newtoni*).

### ECOLOGY

Effect of Drought on Breeding Birds.<sup>36</sup>—Dr. H. Noll has watched birds on the Untersee in Switzerland for fifteen years; the season of 1934 was most unusual owing to the severe drought of the winter and spring, which resulted in low water until the first of August. All the water-birds stayed in flocks much later than usual, but finally began nesting a month or more late; this was true of Coots (*Fulica atra*), Crested Grebes (*Podiceps cristatus*), Red-Crested Pochards (*Netta*

*rufina*), and Swans. Black-headed Gulls (*Larus ridibundus*) and Common Terns (*Sterna hirundo*), on the contrary, began to lay at the regular time on the bare beach, only to have their eggs destroyed by rising waters. The Terns left the region at once, while the Gulls made one more unsuccessful attempt before giving up. Many nests of the Reed Warbler (*Acrocephalus arundinaceus*) in reeds growing on dry land were destroyed by the wind—something that does not happen when the reeds are standing in water.

**Effects of Cold and Heat.**—The wholesale destruction that exceptional weather conditions can bring to bird life is shown by three consecutive items in the July *Vogelzug*. Bleak weather in April and May, 1935, in East Prussia brought migration to a standstill, many birds returning some distance south temporarily. A Pied Flycatcher (*Muscicapa hypoleuca*) ringed in Rossitten on April 27th was found dead May 5th seventy-two miles to the south. A deep snow at this time brought many birds to their ends, not only small species but many Storks, one of which had been banded twelve years before.<sup>37</sup> The migration at Heligoland was also very late.<sup>38</sup>

Curiously enough, a most exceptional heat-wave in Egypt in early May, 1935, caught migration at its height and "countless thousands of birds died of heat and thirst;" here again Storks suffered as well as small birds.<sup>39</sup>

<sup>36</sup> Bericht über die ornithologische Untersuchungen am Untersee 1934-1935. *Der Ornithologische Beobachter*, 32, 112-116.

<sup>37</sup> Schüz, E. 1935. Folgen der Frühjahrskälte 1935 im Osten. *Der Vogelzug*, 6, 135-136.

<sup>38</sup> R. Drost and H. Schildmacher. 1935. Vom Frühjahrzug 1935 auf Heligoland. *Der Vogelzug*, 6, 136-137.

<sup>39</sup> El Schüz. 1935. Vernichtungen durch Hitzewelle auf dem Zuge. *Der Vogelzug*, 6, 137-138.

#### BIRD BEHAVIOR

"The Kumpan in the Bird's World. Conclusion."<sup>40</sup>—The second part of Lorenz' great paper proves easier reading than the first, less space being devoted to theory and more to telling what the birds do. The reader is impressed with the tremendous variety in bird behavior and of the folly of generalizations and statements beginning "birds do thus and so."

The author treats of the Child-Kumpan, Sex-Kumpan, Social Kumpan, and Brother and Sister-Kumpan, summarizes briefly the whole paper, discusses some special problems, referring to Craig, McDougall, Darwin, Wallace, A. A. Allen, Schjelderup-Ebbe, and others, and concludes with bibliography, index, and table of contents. The whole paper is of interest and great value, and one only wishes the author had treated many topics more fully. From this rich array I will select a small portion of the section on the Sex-Kumpan, because of its fundamental importance and its timeliness.

Display behavior and bright plumage (*Prachtkleider*) are to be considered as typical "releasers," *i.e.* they release instinctive behavior in other members of the species. The most common effect consists in a simultaneous evoking of a *positive* reaction in the female and a *negative* one in every other male. (This is true, of course, with the song of territorial birds.) In other cases different organs are specialized for these two purposes: in the domestic fowl the neck feathers are used for threatening other cocks, the tail-coverts for courting the hen. "When Hingston presents the view that all bright colors and striking forms of plumage of male birds, and, indeed, of all animals, have merely a threatening purpose, he is making an extravagant generalization of a theory that holds for only a few forms, for example, certain kinds of lizards." (page 317.)

A most illuminating discussion of the types of mating (*Paarbildung* or the formation of pairs) follows. Three forms are described: of lizards, labyrinth fishes, and cichlid fishes.

In the lizard only the male displays on meeting another individual; a strong male displays in turn and a fight ensues. Females and weak males flee; they are pursued by the strong male and copulation follows. With labyrinth fishes both sexes display on meeting; weaker males flee, as do females that are unready to mate. The female ready to mate makes herself slim and pale, in this manner submitting to the displaying male. Strong females behave like males to weak

females, and a male in heat may take the female's part in relation to a strong male. A third type is shown by the cichlid fishes—namely, mutual display; here both sexes display continuously, neither being made inferior to the other.

Turning now to birds, we find that only a few have the lizard type of mating, Muscovy Ducks (*Cairina*) and related forms being examples.

The majority of birds follow the labyrinth-fish type, although, of course, with endless variations. Here each individual possesses the characteristics of both sexes; it tends to react as a male, unless subdued by the display or superior strength of another individual. The male always dominates the female, hence males mate only with birds lower in the social scale, females only with those higher. "With very many birds the 'peck-order' never appears after they are paired, because the mates never have differences of opinion to decide." But for the formation of the pair dominance of the male was an essential element. With some species of Ducks and Geese and with Jackdaws there is a remarkably strong *personal* attachment between individual mates.

The third type of mating is shown by Herons, among which there is no peck-order, either in the general community or between a pair. Here the birds are not sexually ambivalent; if it were so, every individual would act as a male and never could subdue any one else. Quarrels start easily between Heron pairs, and ceremonies of tenderness have developed out of threatening postures; here there has to be peace without victory—a compromise. These birds are never as devoted to each other as in some species where the male dominates, and substitute mates are readily accepted, as Schüz has shown with the White Stork.

Dr. Lorenz does not pretend that these three types of mating exhaust the possibilities among birds (indeed, he does not mention at all those cases where the female is the dominant partner, as in the Phalaropes, etc.), but he shows how very different the mating-pattern can be and how dangerous sweeping generalizations are. It is impossible to assign one type of mating to one order or family; in the *Anatida* all these three types are shown: the lizard type with *Cairina*, the labyrinth-fish type with Ducks and the cichlid-fish type with Geese and Swans.

To sum up: all especially striking colors and forms of plumage and special behavior-patterns are releasers of instinctive behavior in other members of the species. This is the "only hypothesis that explains that combination of simplicity and improbability that is their commonest and most striking characteristic." (Page 337.)

Dr. Lorenz gives us a solid foundation on which to build; with his illuminating viewpoint we can study bird behavior intelligently, understand phenomena that before were baffling, analyze our observations, and build up the large body of fact for which there is such a crying need. I am happy to report that he is planning a book in English.

"**Bird Societies.**"<sup>41</sup>—A comprehensive account of bird societies throughout the class *Aves*, touching briefly upon flocking behavior in roosts and migration and going into some detail in regard to colonial nesting. Dr. Friedmann finds few evidences of definite social and cooperative behavior except with Jackdaws and Penguins, although a number of species build communal nests—the Monk Parakeet, Ani, an Australian Babbling Thrush, the South African Pied Babbler, and Sociable Weaverbirds. My experience differs from his in regard to Cowbirds, which in Columbus, Ohio, are markedly social with their own species during the breeding-season. He states that "flocks of jackdaws and rooks appear to have sentinels to warn them of danger," but Yeates (*The Life of the Rook*, 934) distinctly scouts the sentinel idea. All in all, a useful and valuable paper.

"**An Experimental Study of Sex Recognition in Birds.**"<sup>42</sup>—In order to test the conclusion of A. A. Allen (*Auk*, 1934, 180–199) that the Ruffed Grouse "and perhaps all species of birds are not cognizant of sex as such," the present authors undertook an interesting set of experiments for they "offered to males of strongly dimorphic species mounted birds of both sexes for discrimination tests." Young Red-winged Blackbirds tried to copulate with a large variety of mounted birds, even Cardinals and Blue Jays, but adult males seldom chose any specimen but the female Red-wing. A House Wren mated as frequently with a mounted



Winter Wren as with a mounted House Wren, but ignored a Long-billed Marsh Wren. A male Golden Pheasant courted mounted females of two different species, but mounted males were either ignored or attacked. The authors conclude that the male Red-winged Blackbird and the male Northern Yellow-throat "can distinguish the sex of mounted birds of their own species, even early in the year before females have arrived on the breeding territories. These highly dimorphic birds are therefore sex-conscious at this season in that they respond differentially to sex when only visual cues are available to them."

Lorenz (40, p. 342) in discussing Allen's experiences and also Heinroth's where a Redbreast copulated with a dead Redbreast, points out that the males in question would have acted very differently with a *live female*, and that the immobility of the dead birds appealed to them in the same way as the immobility of the female that is anxious to mate. "With a bird that practically never is still when awake, the mere fact of complete immobility can be a releaser."

"**Wild Birds at Home.**"—F. H. Herrick. 1935. Appleton-Century, New York, 345, p. \$4.00. Dr. Herrick has done pioneer work in studying nesting birds by means of the blind and the camera; his "Home Life of Wild Birds" (1901) is a classic in this field, while important studies on bird behavior have been published in various scientific journals. The present book is largely a summing-up in popular style of various of his more recent studies.

It is refreshing to find a popular book on birds free from anthropomorphizing. In the reviewer's opinion there are two especially valuable features in the present volume. One lies in the detailed descriptions of the nest-building of several Robins, a pair of Barn Swallows, Red-eyed Vireo, and the Baltimore Oriole; this is a subject on which very little has previously been published. The other is the excellent description of infant bird behavior in Chapter X, under "Response in the Young" and also "Feeding the Young."

Dr. Herrick bases his descriptions of his own experiences on the solid rock of careful, exhaustive observation at close quarters backed up by photographic evidence; in these matters he writes in an impersonal, scientific style that is at once sane and authoritative. When he generalizes on the theories of other people, especially in the first long chapter, he is not so good.

There is a detailed table of contents and an index, but a list of references at the end of the volume would have been more convenient than the footnote method. The book is amply illustrated with splendid photographs.

<sup>40</sup> K. Lorenz. 1935. Der Kumpan in der Umwelt des Vogels. (Schluss). *Journal für Ornithologie*, 83, 289-413.

<sup>41</sup> H. Friedmann. 1935. Reprinted from a Handbook of Social Psychology. Clark Univ. Press, Worcester, Mass., pp. 142-184.

<sup>42</sup> G. K. Noble and William Vogt. 1935. *The Auk*, 52, 287-286.