

## RECENT LITERATURE

(Reviews by Margaret M. Nice and Thomas T. McCabe)

### REPORTS OF BANDING STATIONS

**1. Thirtieth Report of the Vogelwarte of Rossitten.**—(XXX. Bericht der Vogelwarte Rossitten der Kaiser Wilhelm-Gesellschaft zur Förderung der Wissenschaften.) E. Schüz. 1938. *Der Vogelzug*, 9:70-90. A well-worded account of an impressive amount of achievement; no less than 86 papers are cited as based wholly or in part on the results of activity at the Rossitten Station. Each fall during the migration courses are given in bird study. In 1936, 140,436 birds were ringed, in 1937, 92,929; thanks to better economic conditions there are no longer any unemployed to help with observation and banding. A summary is given of some of the most important contributions that have been published.

**2. Fourteenth Report of the Swiss Vogelwarte at Sempach (1937).**—(14. Bericht der Schweiz. Vogelwarte Sempach (1937), A Schifferli. 1938. *Ornithologische Beobachter*, 35:97-113. In 1937, 9968 nestlings and 8618 birds caught in traps were ringed. The ten species ringed in largest numbers follow: the first figure referring to nestlings, the second to trapped birds—Great Tit (*Parus major*) 1472:1659; Starling (*Sturnus vulgaris*) 2852:116; Barn Swallow (*Hirundo rustica*) 576:2060; Greenfinch (*Chloris chloris*) 39:956; Blue Tit (*Parus caeruleus*) 633:272; Pied Flycatcher (*Muscicapa h. hypoleuca*) 778:26; Bank Swallow (*Riparia r. riparia*) 0:680; Redstart (*Phoenicurus p. phoenicurus*) 423:193; Redbreast (*Erithacus rubecula*) 71:476; Black-headed Gull (*Larus ridibundus*) 38:438. Data on longevity include a Great Tit, Blue Tit and Barn Swallow of 6 years, a Common Tern (*Sterna h. hirundo*) and Common Swift (*Apus a. apus*) of at least 7 years, and two Alpine Swifts (*Micropus m. melba*) of 12 years, and two of 14, all four of which were banded as nestlings, three of them breeding in their birth places.

**3. Results from the Study of Migration by Ringing Undertaken by the Museum of Natural History at Leiden; XXV.**—(Resultaten van het ringonderzoek betreffende den vogeltrek, ingesteld door het Rijksmuseum van Natuurlijke Historie te Leiden, XXV.) G. C. A. Junge. 1938. *Limosa*, 11:10-34. A report of returns and recoveries of ringed birds, most data coming from Cormorants (*Phalacrocorax carbo sinensis*) and Starlings. In 1937, 25,418 birds were ringed, those in largest numbers being—Starlings, 7,222; Chaffinches (*Fringilla coelebs*), 1679; Great Tits, 1555; Barn Swallows, 1293; Siskins (*Carduelis spinus*) 1023.

**4. Research in France on Bird Migration by Means of Ringing.** (Les Recherches sur la Migration des Oiseaux par le Bagueage et leur Organisation en France.) E. Bourdelle. 1938. *L'Oiseau et la Revue française d'Ornithologie*, 8:350-359. Ringing activities were organized in 1930 by the Museum National d'Histoire Naturelle under M. Chappellier; 22,995 birds have been ringed and 431 retaken—1.87 per cent. The percentage of retakes of different orders was 2 with Ardeiformes, 0.8 with Lariformes, 2.6 with Passeriformes, 1 with Galliformes, 4 with Strigiformes, and 6.8 with Falconiformes.

### BANDING TECHNIQUE

**5. The Marking of Ruffed Grouse for Field Identification.**—Frank C. Edminston. 1938. *Journal of Wildlife Management*, 2:55-57. Colored feathers and cat bells were found most satisfactory. Detailed instructions are given for preparing and affixing the feathers; the best colors were white, red, orange and yellow.

**6. Sex Determination of Living Birds According to the Form of the Cloaca.** (Geschlechtsbestimmung lebender Vögel nach der Form der Kloakengegend.) R. Drost. 1938. *Der Vogelzug*, 9:102-105. Mason's paper in *Bird-*

*Banding*, 9:46-48 is discussed; Dr. Drost finds that this method works with many species in the spring and fall migration, and with some birds even in the first fall. The male's cloacal region is like a spigot, the female's like a little hill. Care must be used in examination and the feathers blown aside.

**7. Bars in Flight Feathers.**—Harold and Josephine Michener. 1938. *Condor*, 40:149-160. By plucking feathers of some 1500 juvenal House Finches (*Carpodacus mexicanus frontalis*) and by studying the thousands of birds handled each year, the authors found that: "Most flight feathers of post-juvenal or later plumages show bars." "Each of the bars in a flight feather, similar in appearance to a watermark in paper, represents a day's growth of the feather." Another example of the admirable use of which the Micheners make of their opportunities to examine birds in the hand.

#### MIGRATION

**8. The Spring Migration of the Swallow.**—H. N. Southern. 1938. *British Birds*, 32:4-7. A map showing the isochronal lines for the northward movement of *Hirundo r. rustica*, and also lines for the isotherm of 48° F. (10° C.) was "compiled from published information and from personal records," the averages being usually "worked out from a ten-year period," the arrival date meaning "the day upon which the first big influx of the species takes place." Six isochronal lines are given from March 15 to June 1, the 2000 miles over the main part of Europe being covered in 79 days, "an average speed of about 25 miles a day."

**9. Isochronal Lines for Some Bird Species in Europe.**—(Isopiptesen einiger Vogelarten in Europa.) Ursula Sliwinsky. 1938. *Zoologica Poloniae*, 2:249-287. The migration dates of the Barn Swallow, Martin (*Delichon urbica*), Swift (*Apus apus*), Cuckoo (*Cuculus canorus*), and White Stork (*Ciconia ciconia*) were worked out in great detail, data from over 1700 localities being used, and 419 authorities cited in the bibliography. Maps are given for each species with the isochronal lines at five day intervals, the Swallow having 17 from March 6 to June 25, the Stork 10 from March 5 to April 19. If we compare the map for the Swallow with that of Southern's (No. 8) we find them agreeing in the main, but that the present map is far more irregular in Central Europe, showing clearly the retarding effect of the mountains. This careful study should prove valuable to European and English students of migration.

**10. A Phenomenal Spring Migration.**—Ludlow Griscom. 1938. *Bull. Massachusetts Audubon Society*, 22(5):1-3. "The spring now drawing to a close has produced the most remarkable and record breaking migration ever recorded in Massachusetts, particularly as regards the last half of April and first week in May. It is common knowledge that March was an unusually warm and pleasant month, April an extraordinarily hot one, with the vegetation almost two weeks ahead of normal at its close." The Black and White Warbler (*Mniotilta varia*) came 10 days to two weeks early. "Nearly 75 species of birds showed a similar advance over their normal schedule, and it is obvious that we are not dealing with a few casual stragglers. In many cases a species arrived generally ahead of the earliest known straggler in the past 70 years!" In the time table for these species "early dates are completely disregarded where further individuals were unreported for several days after the first was noted." He objects to the inclusion of these stragglers in the consideration of dates of arrival. "Cool weather with northwest winds arrived on May 8 and lasted until May 21." "At the present writing some species have not appeared at all, and others are distinctly late in arriving in numbers."

**11. The Migration of Swiss Blackbirds.**—(Vom Zug der schweizerischen Amseln.) E. Brunner. 1938. *Ornithologische Beobachter*, 35:126-137. A total of 4842 *Turus m. merula* have been banded up to the end of 1936, about a half of which were nestlings; at the end of 1937 there had been 149 retakes—3 per cent. Of these 127 were returns, 22 recoveries. The author calculates that 75 per cent of the breeding birds are resident, 25 per cent migratory. The recoveries were

from south to west, and mainly southwest. No adult was taken further away than 480 kilometers, but of the young two were found over 1000 kilometers away—beyond the Pyrenees. The young migrate earlier than the adults; females are more migratory than males. The greatest age was at least 4 years.

**12. Wanderings of Ringed House Sparrows.**—(Wanderungen beringter Haussperlinge (*Passer d. domesticus*). B. Rademacher, C. Jitschin, M. Dunkow, A. Hansch. 1938. *Der Vogelzug*, 9:110. Recoveries of old and young birds of both sexes from different places in Germany: 20 and 40 kilometers north, 40, 66, 106 and 150 kilometers southwest, the last record being of an old male banded in August, 1935 and taken in January, 1937. Twenty-eight other individuals were found within two kilometers of the place of banding.

**13. On the Migratory Behavior of English Mallards Moved to a Distance.**—(Ueber das Zugverhalten umgesiedelter englischen Stockenten (*Anas p. platyrhynchos*). P. Putzig. 1938. *Der Vogelzug*, 9:139-145. Eggs of English Mallards, which are non-migratory in their native land, were sent to Königsberg, East Prussia in April, 1936, and the young raised. Some of the birds migrated late in the season to Sweden and Denmark, while five remained and were fed at the station. These nested in the spring, and the following autumn (about September) both adults and young left. The greatest distance of recovery of a bird of the second generation was in Holland—1030 kilometers. Two of the young females returned the following spring. Recoveries of both generations were well within the migration sector of Mallards breeding to the east and northeast of Königsberg. In 1936 cold weather did not come until November 19; in 1937 it came in late September and mid October. "It seems to be that during a certain 'time of readiness,' as I have called it, external factors like weather conditions and hunger can bring about migratory movements that appear to be truly instinctive."

**14. Notes on Migrations of South American Birds.**—John T. Zimmer. 1938. *Auk*, 55:405-410. There is no job left for ornithology as important (or as dramatic) as working out the true migrations of South American birds and the lesser borderline movements of tropical and southern-hemisphere birds in general. It is not merely a question of filling in the last large details of the arrangement of birds on the face of the earth, but of getting at the nature of this magnificent example of the rhythmic forces which dominate bird life in the only way possible, which is through its incipient stages, its intergradations, variations, and reversals under a thousand conditions unrepresented in our relatively stereotyped north temperate zone. This in spite of unrecognized riches at our own feet—witness Mrs. Nice's Song Sparrows.

Mr. Zimmer gives a short recapitulation of his more detailed papers, with the announcement that some half-dozen flycatchers have been proved to migrate from breeding grounds between southern Brazil and the southern Argentine (October to February) to regions in northern South America, with occasional occurrence of at least one in the southern Caribbean Islands. Chapman has shown similar behavior for one martin and two swallows.

There exists in northern South America a zone with two separate seasonal populations, migrants from the northern and southern continents, both transient, neither breeding. In so far as yet known, only one species, *Vireo vireescens*, has races in both groups.—T. T. McC.

#### HOMING

**15. "Homing Instinct" in the Golden-crowned Sparrow.**—E. L. Sumner, Sr. 1938. *Condor*, 40:127-128. Two cases of wintering *Zonotrichia coronata* removed to a distance and returning the following year to the place of release. Others remained for many weeks. One bird was banded December 13, 1936 and released 40 miles north; he was retrapped here October 5, 1937. Fifteen of these birds were trapped at Berkeley January 20, 1934 and released next day at Woodacre 20 miles northwest; two were retrapped at Berkeley in January and February 1934, while one was trapped at Woodacre February 3, 1934, and later November 10, 19, and December 2, 1934.

**16. Homing Instinct and Straying among Steelhead Trout (*Salmo gairdnerii*) and Silver Salmon (*Oncorhynchus kisutch*).**—A. C. Taft and Leo Shapolov. 1938. *California Fish and Game*, 24:118-125. A high degree of homing found, practically all of the tagged fish being found in their own natal streams within a river system.

#### EXPERIMENTS ON THE PHYSIOLOGY OF MIGRATION AND REPRODUCTION

**17. Studies on the Time of the Migration Restlessness in Caged Birds.**—(Studien über den zeitlichen Ablauf der Zugerregung bei gekäfigten Kleinvögeln. I.) Pontus Palmgren. 1938. *Ornis Fennica*, 15:1-16. An improved registering apparatus is described; it is equipped with a clock which gives exact time of the start and end of restlessness. The author suggests that sleep is induced when a certain degree of twilight is reached, even if sleep lasts only 20-30 minutes.

**18. The Physiology of the Migratory Instinct. IV. Further Researches with artificially Changed Lighting.** (Zur Physiologie des Zugtriebes. IV. Weitere Versuche mit künstlich veränderter Belichtungszeit.) H. Schildmacher. 1938. *Der Vogelzug*, 9:146-152. Redbreasts (*Erethacus rubecula*) given extra light from January 30 on showed migration restlessness some 3 weeks earlier than the controls, early enlargement and subsequent atrophy of the gonads, premature molt. Others kept on an eight-hour day were inhibited in the growth of the gonads and showed very little migration restlessness. While these birds and the controls responded with migration restlessness to rising temperatures in the spring, the lighted group exhibited it despite low temperatures.

**19. London Starlings and Seasonal Reproduction in Birds.**—Wm. Rowan. 1938. *Proc. Zool. Soc. London*, Ser. A. 108, Part 1:51-77. A scholarly review of the question of "the effects of light on the seasonal reproduction of vertebrates", with a critical review of the most important experiments—his own, Benoit's, Bissonnette's, Riley's and Ivanova's. "Increased temperatures are without effect on the development of the gonads of homoiothermal vertebrates, although they may be essential to the act of breeding. The essence of the light experiments with which this paper deals is embodied in the relative length of day to which the animals are exposed, passage from a short to a longer day inducing development of the sex-organs, while a curtailed day results in regression."

"Intensity, provided it is sufficient to induce wakefulness, appears to be of little further significance, since its increase beyond a certain relatively low point is immaterial. . . . It is possible to induce winter development of the testes in juncos by means of compulsory exercise forced on the birds in almost total darkness, the light used being below the point at which it begins to be effective by itself. Bissonnette's failure to corroborate these results with Starlings is attributed to the nervous temperament of this species. His birds showed protracted fright and muscular exhaustion during the entire running of the experiment."

#### LONGEVITY

**20. Longevity of a Black-headed Gull.**—H. W. Robinson. 1938. *Auk*, 55: 278. On June 13, 1910 the author banded a chick of *Larus ridibundus* in a Cumberland gullery; it was found dead (egg-bound) in the "parent gullery" May 26, 1930. The author is mistaken in thinking this "the oldest banded bird so far recorded." Records of seven birds that reached higher ages have been published in *Bird-Banding* reviews: an Osprey (*Pandion haliaëtus*) of 21 years (Lincoln, *Bird-Banding*, 7:42); an Oyster-catcher (*Haematopus ostralegus*) of 22 years (Weigold, *Vogelzug*, 7:52) and Herring Gulls (*Larus argentatus*) of 21, 22, 23, almost 25, and 26 years old (Schüz, *Vogelzug*, 7:68-78.) There is also a mention by Witherby (*British Birds*, 34:55-56) of a Golden Eagle (*Aquila chrysaëtus*) taken in Germany that had been ringed for twenty years.

Other data on longevity will be found in Numbers 2 and 11.

## WEIGHT

**21. Variations in the Weight of Birds.**—S. Prentiss Baldwin and S. Charles Kendeigh. 1938. *Auk*, 55:416–467. A large part of this highly technical paper is devoted to statistical ground-clearing, and the presentation of the figures on as found a biometric basis as possible. This is followed by the establishment of certain diurnal and annual rhythms, and an absolute as well as seasonal correlation between weight and temperature.

The reviewer cannot but feel that the part of the paper which deals with hourly and diurnal change and with temperature correlations within limited periods is far more successful than the treatment of annual rhythm. This because of the illogical jumbling, in the latter case, of types of birds of the most diverse annual cycles into a single treatment,—in other words, to over-preoccupation with the calendar year rather than with the calendars of the individual species or races. The averages are too generalized on a basis of time to reveal their significance as applied to a single life-history. Surely what is needed is at least an alternative grouping, not according to months with conclusions as to the positions of the coordinates for “midsummer” or “midwinter,” but according to *status*, as migrant or resident, and time previous to, during, or following, the principal events of the life, such as migrations and the stages of reproduction. Given such a “set-up,” the reviewer ventures to predict not only that the vaguely and broadly rhythmic curves and temperature correlations will become sharp and full of contrast, but that they will in certain classes of cases, assume the color of relatively independent cyclic phenomena. From the nature of the material, the paper suffers from lack of information on the phenomena of fat.

These considerations, as far as the reviewer is concerned, throw the whole weight of the ensuing theory of direct metabolic response of weight to temperature on the daily or short-period analyses, which seem, however, likely to prove strong enough to support it. With the application of this principle to ecology and distribution we enter a field of the most extraordinary interest. While the threads which support the general idea of a connection between metabolic adaptation, as expressed in weight-correlations with falling or rising temperatures, and geographic range as a function of temperature tolerance, are still very tenuous, they are sufficient to lead anyone capable of following them along an avenue of magnificent research. The high qualification is the ability and willingness to work on the life of the bird and on the environment not less hard than on the physiology.

The authors have the temerity to make actual applications of the temperature-weight adaptation ranges of Tree Sparrows, White-throated Sparrows, and English Sparrows. The weight-temperature correlation range of the resident English Sparrows just about covers the local temperature range. The winter temperatures are more apt to exceed the adaptive range of local Song Sparrows, and most of the population migrate.—T. T. McC.

**22. Weights and Wing Areas in North American Birds.**—Earl L. Poole. 1938. *Auk*, 55:511–517. Weights of 143 North American species.

**23. Observations on the Post-embryonic Development of the Rosy Pelican.**—(Beobachtungen über die postembryonale Entwicklung des Rosenpelikans.) Adolf Portmann. 1937. *Revue Suisse de Zoologie*, 44:363–370. Weights of a young *Pelecanus onocrotalus* raised in the zoo at Basel show a maximum of 13.85 kg. at the age of 63 days, dropping to 10.9 kg. when feather growth had ended. This peak of weight in young birds has been reported in Tubinares, Accipitres, Steganopodes, Psittaci, Striges, Coraciae and some Passeres.

**24. Reports on the Study of the Post-embryonic Development of Birds. I. Comparative Investigation on the Ontogeny of Gallinaceous and Passerine Birds.**—(Beiträge zur Kenntnis der postembryonalen Entwicklung der Vögel. I. Vergleichende Untersuchungen über die Ontogenese der Hühner und Sperlingsvogel.) Adolf Portmann. 1938. *Revue Suisse de Zoologie*, 45:273–348. The peak of weight found in the development of many young birds is due

to the great development of the intestines and liver. (Stevenson, *Wilson Bulletin*, 44:155-167, found the stomachs in 3 species larger in the nestlings than in the adults, and "a relatively, if not actually, longer small intestine in nestling birds than in adults.") Weights are given for young chickens, Starlings and a Nuthatch (*Sitta europea*), and also for separate organs of the first two. There is an interesting discussion of contrasts between the development of gallinaceous birds, which the author considers primitive and the highly evolved passerines, besides much on theoretical aspects of nest life from the evolutionary standpoint. The summary is excellent.

#### LIFE HISTORY

**25. Further Accounts of the Delayed Home-coming and Population of the White Stork in 1937.**—(Weitere Angaben über Heimkehr-Verzögerung und Bestand des Weissen Storches 1937.) E. Schüz and R. Drost. 1938. *Der Vogelzug*, 9:97-102. In Denmark the migration came in two peaks, early and very late. Cold weather in May was disastrous to many broods. In 1934, 1.9 young were raised per nest in 200 nests; in 1936, 1.8 young per nest in 185 nests and in 1937, 1.4 young per nest in 200 nests. The percentage of pairs that raised no young in the three years was 20.9, 30.1 and 47.2 respectively. In Schleswig-Holstein some Storks returned 3 months late; 84 nests were occupied by only one adult, while 836 of 1905 pairs raised no young. The number raised per pair in 1930 and 1934 was 2.4; in 1935, 2.1, in 1936, 1.9; in 1937, 1.4. Reports from Africa indicate destruction by hail storms, by natives that eat the birds, and also probably by parasites in frogs.

**26. Report on the Stork in the Netherlands in 1937.** (Gegevens over den Ooievaar (*Ciconia ciconia* (L.)) in Nederland in 1937.) Fr. Haverschmidt. 1938. *Ardea*, 27:152-156. Most of the breeding birds returned late; few young were raised. In 1935 an average of 2.14 young were raised in 170 nests; in 1936, 2.23 in 219 nests; in 1937, 1.78 in 188 nests. In 1935, 36 pairs raised no young, in 1936 this was true of 46 pairs, while in 1937, 67 pairs (35 per cent) raised no offspring.

**27. Eider Ducks of Kent's Island.**—Alfred O. Gross. 1938. *Auk*, 55:387-400. Kent's Island lies in the mouth of the Bay of Fundy, and was given to Bowdoin College by John Sterling Rockefeller in 1935 to be maintained as a bird sanctuary.

*Somateria m. mollissima* winters to southward, arrives in Fundy early in April, and mates (polygamously, with rather commonplace courtship performances) a couple of weeks later,—an event which terminates the male's share in reproductive activities. Many of the nests are now placed in the dense woods, a recent change, probably the result of crowding by the nesting Herring Gulls. In 1937, as the result of protection, the eider nests with eggs had risen to some three hundred at the height of the season. The eggs are bedded in down, though only at completion of the clutch, and can be left unbrooded for from two to three and a half hours daily, according to the stage of incubation. Eiders may lay in Herring Gull nests, and if the duck eggs hatch first the gull tries to care for the chicks, deserting its own eggs. The great ducks are well able to "beat up" the gulls, and have been seen to drag sitting birds off the nests. The description of the triumphant and aggressive behavior of an eider after such an encounter is amusingly similar to that of a Canada Goose under like circumstances which the reviewer has published. Incubation is for twenty-eight days, and the downies are among the few which are led directly into salt water, within twelve hours at most of the hatching of the last chick in the case of the single nest which was watched regularly from a blind.

Any modern observation of the breeding behavior of the Anatidae is almost pure prospecting, and this paper, in addition to its solid routine information, is not without its dramatic "strikes." The sudden change at hatching-time in the female's manner of return to the nest was alone worth weeks of watching.—T. T. McC.

**28. Nesting of the Turkey Vulture.**—W. Bryant Tyrrell. 1938. *Auk*, 55:468–470. Graphic descriptions of a series of visits to a nest in Maryland during the period of incubation and the growth of the young, which is illustrated by photographs. There is a surprising description of the brooding parent's allowing herself to be lifted from the nest and handled repeatedly, returning to her young as often as she was liberated on the ground, but flying away when placed on an elevated log.—T. T. McC.

**29. The Nesting of the Honey Buzzard.**—(Zur Brutbiologie des Wespenbussards.) G. Thiede. 1938. *Beiträge Fortpflanzungsbiologie der Vögel*, 14:57–65, 100–105. Detailed observations on a nesting of *Pernis apivorus*, including one whole day in which the father was seen to help the second young out of the egg. Both parents incubate and brood the young, and both bring food. At first the young are partly fed on regurgitated food.

**30. The American Coot in Iowa.**—C. E. Friley, Jr., L. J. Bennett, and G. O. Hendrickson. 1938. *Wilson Bulletin*, 50:81–86. No evidence was found of *Fulica a. americana* injuring other marsh birds. Forster's Terns (*Sterna forsteri*) were often seen driving Coots "from the vicinity of terns' nests and young." Average number of eggs per nest was between six and seven. "The hatching rate in 1935 reached the high point of 98 per cent among 292 eggs of forty-two nests." The young hatch one each day; they are fed by their parents for at least three weeks. Some drown through getting entangled in vegetation.

**31. Report on the Breeding Biology of the Ringed Plover.**—(Beiträge zur Brutbiologie des Halsbandregenpfeifers (*Charadrius hiaticula* L.) Hannes Laven. 1938. *Beiträge Fortpflanzungsbiologie der Vögel*, 14:49–54. A continuation of the work of Koehler and Zagarus (*Beiträge*, 13:1–9, see *Bird-Banding* 8:87). Eleven adults had been banded in 1936 with aluminum and colored rings; of these 4 females and 2 males returned to their breeding places, while a fifth female was found dead June 5, 1937, 23 kilometers north. Of the 22 young that had been banded, one was seen in the observation area June 10. One pair remated; another female mated with a new male one-half kilometer from her former territory, which her first mate, who had lost one foot, defended alone from April 16 to May 22. One female defended her old territory from April 29 till May 11, when she was joined by an unbanded male. The male makes the nest; both parents incubate. The young are dry one and one-half to 2 hours after hatching, start to peck when 2 hours old, make expeditions from the nest when 4 to 5 hours old, eat mosquitoes when 8 hours old and leave the nest permanently when 10 hours old. At 21 days they can fly short distances. One bird laid 5 sets of eggs, but all were destroyed. Of 21 layings containing 87 eggs only 19 young were hatched. Hooded Crows (*Corvus cornix*) seemed to be the greatest enemy, but nests were also destroyed by foxes, by a storm and high water.

**32. The Nesting of the Woodcock.** (Das Brutleben der Waldschnepfe.) Otto Steinfatt. 1938. *Journal für Ornithologie*, 86:379–423. A study of *Scolopax rusticola* in East Prussia. The males have two periods of courtship flights in April and June, corresponding to the two broods raised by the females. A nest was watched for a whole day during incubation; the female left in the morning and evening twilight at about the time of the male's display flights. The young hatched in the night; at 5.30 the mother *picked up a baby in her bill and carried it to a distance of one and one-half meters*; she did the same with the others, then brooded them for 45 minutes. Again she picked them up, this time carrying them two and one-half meters further. Then she returned to the nest and pushed all the egg shells into the nest. She did not attempt to carry the young over a fence which the observer had erected around the nest.

**33. Breeding-Habits of the Dunlin.**—R. H. Brown. 1938. *British Birds*, 31:362–366. *Calidris alpina schinzii* breeds on salt marches in Scotland. The courtship flight is performed by both sexes and is accompanied by a rich trilling note. When a pair with small young are surprised by a person, the cock gives warning notes, while the female may feign injury.

**34. The Biology of the Song Parrot.**—(Zur Biologie des Singsittichs, *Psephotus haemalonotus* (Gould).) H. Hampe. 1938. *Journal für Ornithologie*, 86:330-334. These birds are usually devoted to their mates, but quarrelsome with others of their kind. A hand-raised male started to feed his master's finger at the age of 51 days and to court it at 115 days. The female incubates and is fed by her mate. Incubation lasts 19 to 20 days, fledging  $4\frac{1}{2}$  to 5 weeks.

**35. Owl Studies at Ann Arbor, Michigan**—Kenneth A. Wilson. 1938. *Auk*, 55:187-197. The best of the various studies of owl pellets. It is not the usual analysis of the pellets at some notable nest-site or roost, but a determined effort to follow all the individuals of five species in a region of unstated size about Ann Arbor through their annual cycle, including the briefly and casually occupied stations. A great deal of the natural history of the birds, over and above mere food data, is therefore developed, and the value of the paper exceeds its economic purpose. Rodent consumption is high and bird consumption low in all cases. The species treated are the Long-eared Owl (*Asio wilsonianus*), Screech Owl (*Otus asio*, doubtless *naevius*), Saw-whet Owl (*Cryptoglaux a. acadia*), Barred Owl (*Strix varia*), and Barn Owl (*Tyto alba praticola*).—T. T. McC.

**36. Nest Life of the Bank Swallow.**—L. K. Beyer. 1938. *Wilson Bulletin*, 50:122-137. A nest of *Riparia r. riparia* was watched by digging a hole down to it and inserting a pane of glass. When the young failed to respond, the male "lightly tramps over them, gently kicking them, calling sweetly all the while." During an all day watch when the two young were 13 days old, meals were brought 115 times averaging once every 5 minutes during the 15 hours, the parents feeding about equally, and only one bird being fed at a time. Fear appeared about the 14th day; the young left at 18 days. The parents kept "bringing new feathers or straw or grass stems to the nest until a few days before the young leave." No summary and no references given to the rather extensive literature on this Swallow in this country and abroad.

**37. The Magpie in Scotland.**—A. B. Duncan. 1938. *The Scottish Naturalist*, 231:1-79. Another cooperative survey of geographic range and abundance. The modern history of *Pica pica* in North Britain is: (1) previous to about 1850 and the cult of game preservation,—abundant, ranging practically throughout Scotland; (2) from the mid-nineteenth century to the world war,—great reduction both in numbers and range as the result of persecution by game-keepers; (3) war-time neglect and increase; (4) resumption of slaughter and decrease, and (5) the present economic depression, reduction of preserves and division of estates, with probable incipient increase.—T. T. McC.

**38. The Nest Life of the Marsh Tit and Some Comparisons with the Nest Life of Other Native Titmice.**—(Das Brutleben der Sumpfmeise und einige Vergleiche mit dem Brutleben der anderen einheimischen Meisen.) Otto Steinfatt. 1938. *Beiträge Fortpflanzungsbiologie der Vögel*, 14:84-89, 137-144. *Parus p. palustris* is resident in East Prussia and the pairs remain permanently mated. The young leave their parents two weeks after fledging. The pair seek a nesting hole together, the female taking the lead; she builds the nest, accompanied by her mate. She incubates, often called off the nest by the male, who feeds her to some extent. Incubation lasts 13 to 15 days. One nest was watched 12 hours on the 12th day of incubation; the female was on 84 per cent of the time from 6.15 A.M. to 7 P.M. on a warm day; she left 17 times. Periods on the nest ranged from 5 to 73 minutes, averaging 37.9; periods off from 2 to 15 minutes, averaging 7.1. A nine hour watch when the young were 1 and 2 days old (also a warm day) showed that 85 per cent of the time was spent on the nest. The female left 26 times; periods on ranged from 1 to 46 minutes, averaging 17.4; periods off from 1 to 8 minutes, averaging 3.2. Seven young 8 and 9 days old were watched from 3 to 12 one day and from 12 to 7 the next—a "full day" of 16 hours. The parents fed from 3.47 A.M. to 6.49 P.M., the male 110 times, the female 85 times, an average of 13 times an hour for both. The young stay in the nest for 17 to 20 days.



The sedentary and permanently mated Marsh Tits, "Willow Tits" or Black-capped Chickadees (*Penthestes atricapillus salicarius*) and Crested Tits (*Parus cristatus*) start nesting within a few days of each other (i. e. each species), but the migratory Great Tits (*Parus major*) show a much greater spread. The migratory Great Tits, Blue Tits (*Parus caeruleus*), Coal Tits (*Parus ater*) and Long-tailed Tits (*Aegithalos caudatus*) breed twice a year with large sets (averaging 12 for 48 cases) for the first brood, while the resident Marsh, Willow and Crested Tits, have only one brood, averaging about 8 eggs. The latter need to raise only one-half to one-third the number of young that the former must. "It seems as if the loss of a Titmouse species through migration is twice as high as that through the severity of the winter." (To Americans the numbers of eggs in the sets of European Titmice are amazing.) The resident Nuthatch (*Sitta europaea*) has one brood, while the migratory Tree Creeper (*Certhia familiaris*) and Golden-crested Kinglet (*Regulus r. regulus*) have two broods.

**39. Nesting and Re-Mating of a Pair of Bluebirds.**—H. J. Broderick. 1938. *Auk*, 55:538-539. A banded pair of *Sialis s. sialis* in Virginia raised two broods in 1934 and attempted two in 1935, but the female was killed by a black snake while incubating the second set. The male returned in 1936 and mated with a bird that had nested nearby the year before. Both adults built the nest, and the male assisted in incubating. In 1934 6 eggs were laid May 13-18, they hatched May 31 and the young flew June 17 and 19; the parents returned July 1, 4 eggs were laid July 4, 5, 7, 9, and hatched July 20-22, the young leaving August 7. The next year 6 eggs were laid April 28-May 3, they hatched May 16-18, and the young flew June 4. The parents returned June 15 and 5 eggs were laid June 19-23.

**40. Nest Observations with the Burred Warbler.**—(Nestbeobachtungen bei der Sperbergrasmücke, *Sylvia nisoria*). Otto Steinfatt. 1938. *Ornithologische Beobachter*, 35:122-126. A nest with 5 young was watched from a blind 3 meters away; a 16½ hour record on 2 days showed 307 feedings, 158 by the male and 149 by the female. Feeding began before 3.00, so the birds probably brought meals about 330 times in a day. Excreta was carried off 44 times by the male, 33 times by the female. The female brooded the young at night, but the male seemed the more devoted of the two. Both feigned injury when the blind was being erected. The young begged with vibrating movements of the head.

**41. Nesting of the Hedge Sparrow.**—(Das Brutleben der Heckenbraunelle, *Prunella m. modularis*.) Otto Steinfatt. 1938. *Ornithologische Monatsberichte*, 46:65-76. Two broods are raised, the female incubating, occasionally being fed by the male. He never signaled to her to leave the nest, nor accompanied her back. He did not sing and seldom visited the nest. Incubation lasted 11 and 12 days, fledging 13 days. Two all-day records were made during incubation. One female left 22 times; periods on the nest ranged from 13 to 67 minutes, averaging 29.4; periods off from 2 to 37, averaging 12.6; 69.8 per cent of daylight hours being spent on the nest. The other female left 20 times; periods on ranged from 8 to 98 minutes, averaging 30, off the nest ranged from 8 to 35, averaging 16.7, the percentage of time on being 63. When the young were 1 and 2 days old the first female left the nest 32 times, the percentage of time spent brooding on this rainy day being 64.

Three all-day feeding records were made. When the three young were 1 and 2 days old they were fed once every 16 minutes; when 8 and 9 days old once every 10.7 minutes, when 11 and 12 days old once every 8.8 minutes. The feeding days ranged from 15½ hours to 15 hours 52 minutes. On the first day the female fed 40 times, the male 19; on the second the female fed 41, the male 48; on the third she fed 53 times, he 55. The parents fed the young both regurgitated seeds and insects, often at the same feeding!

**42. Nesting of the Paradise Flycatcher.**—(Vom Paradiesfliegenschäpper *Tersiphone viridis plumbeiceps*.) W. Hoesch. 1938. *Journal für Ornithologie*, 86:328-329. In Southwest Africa. The nest is built by the female of dead leaves

and spider webs. Both parents incubate. At one nest the male was on rather regularly from 9 to 12 A.M. and 4 to 7 P.M. The three eggs hatch in 13 days, and the young are fledged in 10 to 12 days. The excreta are dropped into water by the parents. They are courageous in attacking enemies, even house cats, but also will not suffer harmless chameleons.

**43. The Black Honeyeater.**—Hugh V. Milne. 1938. *Emu*, 37:247-250. Casual running comment on *Myzomela nigra*. By far the most interesting fact is the brief migratory movement from Victoria south to the coast to breed, with return in about nine weeks, or, as the author appears to believe, within little over two weeks from the time of fledging the young. This will probably appear less unlikely to us when we know more of certain of our own migrants, notably the arctic-breeding shore birds, but also certain small passerines, such, perhaps, as the western Yellow Warblers. The nest and its surroundings, and something of the behavior, is readably described.—T. T. McC.

**44. Nesting of Virginia's Warbler.**—Alfred M. Bailey and Robert J. Niedrach. 1938. *Auk*, 55:176-178. A brief and affectionate picture of *Vermivora virginiae* and its spring surroundings in the colorado scrub oaks.—T. T. McC.

**45. The Eastern Cowbird vs. the Kentucky Warbler.**—J. Warren Jacobs. 1938. *Auk*, 55:260-262. A too brief analysis of a splendid fund of information involving fifty years of watching and over 300 nests. The material deserves expansion in detail,—even at the risk of turning a mature and charming communication into a hypertabulated, up-to-date, bore. The author finds that on the average "one breeding pair of Kentucky Warblers out of every four is due to lose an egg from its normal laying." Other factors directly or indirectly attributable to the Cowbird, such as claw-puncturings and desertions, are harder to tie down to figures, especially as second nests have the advantage of much better cover. There is a quite regular inverse relationship between the number of eggs of the host and the parasite.

Minor critical quibblings with the figures are possible. The average numerical loss of eggs just cited, for instance, would be true if the numbers of nests parasitized and not parasitized were equal, which is not quite the case;—at least the averages are based on seventy-three and sixty nests respectively. Analysis of Cowbird detriment is not carried beyond the egg stage. Nothing is said of the effect on survival after hatching.—T. T. McC.

**46. Breeding Biology of the Orange-breasted Tanager.** (Zur Brutbiologie der Orangebrusttangere (*Calospiza thoracica* Tem.)) Georg Steinbacher. 1938. *Beiträge Fortpflanzungsbiologie der Vögel*, 14:81-83. A pair in the Berlin zoo nested during the winter. Both birds are brilliantly colored, the female almost as much so as her mate. The male had no special song; both had the same courtship display, the female indulging in it oftener than did the male. He brought material and she built; she incubated, while he occasionally fed her. Incubation lasted 12 days. Five young were hatched in two nests, but none were raised, as apparently the parents gave the young too large pieces of the mixed food for them to swallow.

**47. Some Observations on the Breeding Habits of Birds.**—J. D. Bletchly. 1938. *British Birds*, 32:8-12. Incubation and fledging periods, and percentage of fertility in eggs are given from 4 years observation on an area of two square miles in mid-Gloucestershire in which the large number of 1364 nests were located, most of them being of species that build open nests. In 584 occupied nests of passerines the average number of eggs hatched ranged from 0.9 (in 70 nests of the Song Thrush, *Turdus e. ericetorum*, and 330 of the Blackbird, *Turdus m. merula*) to 4.2 (in 6 nests of the Whitethroat, *Sylvia c. communis*), the average of all the nests being 1.11. The number of young fledged ranged from 0.7 (in 22 nests of the Chaffinch, *Fringilla coelebs*, and 303 of the Blackbird) to 2.9 (in 7 nests of the Whitethroat), the average of all being 0.81. This is a surprisingly low figure; even if each pair made 4 attempts at nesting only 3.2 young per pair would leave the nest each season.

With the Song Sparrows (*Trans. Linnaean Soc. New York*, 4) the average number of young fledged, per successful nest during 7 years, ranged from 0.8 to 1.8, averaging 1.4 in 223 nests. (It is true that *Melospiza melodia* leaves the nest at a more precocious age—10 days—than do thrushes, and that a few days later a slightly smaller number of young per nest would be alive.) One year I knew the complete reproductive history of 15 pairs that survived the season; an average of 4.3 young were fledged per pair.

Mr. Bletchly in answer to a letter attributes about 57 per cent of the mortality to pillaging by Crows, Magpies and other predators, and 38 per cent "to robbery and interference by boys, who were very numerous in the neighborhood, and engaged in this sort of thing fairly systematically."

In Table XVII of my Song Sparrow study mentioned above data are given on six studies of passerines building open nests from localities ranging from England to California; in 557 nests 937 young were fledged. The average number per total nest varied from 1.4 to 1.9 while the average of all the nests came to 1.7.

#### BIRD BEHAVIOR

**48. Postures and Voice in the Cormorant.**—(De uitdrukkingbewegingen en -geluiden van *Phalacrocorax carbo sinensis* (Shaw & Nodder).) A. Kortlandt. 1938. *Ardea*, 27:1-40. A detailed study of courtship and behavior of the young from the viewpoint of McDougall's conception of instinct. In courtship certain behavior is seen in the "sitting partner" and other behavior in the "standing partner" regardless of sex. At first the young are subordinate to the adults, but at the age of 2 or 3 months there is a change in voice and behavior; they become quarrelsome and can hold their own with the adults. The article is illustrated with 24 excellent sketches and two photographs.

**49. The Biology of the Little Ringed Plover.**—(Bijdrage tot de biologie den Kleinen Pleivier (*Charadrius dubius curonicus* Gm.)) J. E. Sluifers. 1938. *Ardea*, 27:123-151. A detailed study of courtship and nesting behavior. "The larger the number of breeding pairs, the smaller the territories and the sharper their delimitation. The territory, despite the presence of food, is not used as a feeding area. Fighting is in connection with the territories."

Both these articles are in Dutch with German summaries. It seems to the reviewer a great pity to publish important papers on bird behavior in a language that few people can read. Simple narrative can be understood without too much difficulty, but theoretical discussions are an entirely different matter.

**50. Will and Kate.** Wm. Vogt. 1938. *Yale Review*, Summer: 733-743. A charming and illuminating account of territory and nesting in the Willet (*Catoptrophorus semipalmatus*) in New Jersey. "Establishment and protection of territorial rights, and courtship, then, have one trait in common—rapid vibration of extended wings."

**51. Intelligent Behavior in the Clapper Rail.**—Olin Sewall Pettingill, Jr. 1938. *Auk*, 55:411-415. This is a brief account of bird behavior which the author believes to be intelligent, since it seems to involve comprehension and rectification of unfamiliar adverse conditions. It unquestionably shows surprising pertinacity and rapid power to learn by experience on the part of *Rallus longircstris crepitans*. In one case a brooding bird, after three minutes contemplation, awkwardly replaces an egg it had kicked from the nest, and learns to do so rapidly and efficiently through subsequent experimental removals to increasing distances, even out of reach of the nest. In another case, when a downy brood, in danger of destruction by a flood tide, are rescued by the author and kept in a covered carton overnight, the parents come to the porch in the morning and actually throw back one lid flap, though not, it must be observed, the second or third, which would have been necessary to reach the young. We must suspect that the action involved would have served to remove a stick or clear away grass. A third case is cited of persistent search for removed young and quick learning of the way to reach them.

Von Goethe's recent paper on Herring Gull behavior (1937, *Journal für Ornithologie*)

*thologie*) has observations on egg recovery, which is certainly more limited than in the rail.—T. T. McC.

**52. Nesting of the Nuthatch.**—L. S. V. VENABLES. 1938. *British Birds*, 32:26-33. Two pairs of *Sitta europaea affinis* were watched during nest building and afterwards; data are given on the speed of plastering. The Nuthatches drove off Blue Tits that were interested in the same hole, but not species that were not nest-site competitors. The Blue Tits knew the Nuthatches by sight, but not by voice. A female mount was erected near the nest and the male Nuthatch gave the "excitement call," attacked it, then attempted to copulate. A male mount was attacked, and the next day the female mount. The female attacked the female mount, but not vigorously. The author describes the "mating display" and "intimidation display."

**53. The Bathing of Birds.**—(Das Baden der Vögel.) OSKAR HEINROTH. 1938. *Ornithologische Monatsberichte*, 46:97-100. An interesting account of varying behavior in regard to bathing, both ordinary procedure and unusual. True steppe birds bathe only in dust; this is the case with Gallinaceous birds, Larks, Bustards and Hoopoes. "Water and marsh birds never bathe in dust." With some birds-of-prey, Kinglets, the Snow Finch and "Sparrows" (Passer) both water and dust baths are taken.

**54. On the Conception of Instinct.**—(Über die Bildung des Instinkbegriffes.) KONRAD LORENZ. 1937. *Die Wissenschaften* 25(19):289-331.

**55. On the Conception of Instinctive Behavior.**—(Über den Begriff der Instinkhandlung.) KONRAD LORENZ. 1937. *Folia Biotheoretica*, 2:17-50.

In these two papers Dr. Lorenz gives a critical discussion of the different theories on instinct and explains his own position.

**56. Vibration Frequencies of Passerine Bird Song.**—ALBERT R. BRAND. 1938. *Auk*, 55:263-268. Vibration frequencies indicate, of course, only the pitch of bird song, not the quality or timbre which may make two notes of similar pitch of different birds totally unlike, and which is far more difficult to define in physical terms. The Cornell Laboratory of Ornithology has apparently been the first to collect a large number of different song and call records with a film (rather than a disk) mechanism which can reach the highest known avian frequency, that of the Blackpoll Warbler, *Dendroica striata*, with 10,225 maximum and 8900 average vibrations a second. Nicholson and Koch, in Germany and England, have apparently missed the highest frequencies. In the present paper the variations in frequency throughout the song are not recorded—only the means and the extremes for fifty-nine species.—T. T. McC.

**57. The Song of Kirtland's Warbler.**—HAROLD H. AXTELL. 1938. *Auk*, 55:481-491. If the paper by Albert R. Brand in the previous *Auk*, also reviewed in this issue, outlines the scope of the new physical study of bird song in the single matter of pitch, the present paper, also by a member of the Cornell school, applying the full potentiality of the method to one song, as an adjunct to field studies, foreshadows a future science of avian phonetics which bids fair to surpass anything which could have been imagined in the past.

The paper ends with the comparison of an annotation by the Saunders method of such broad phases of one of the songs of *Dendroica kirtlandi* as can be detected by the human ear, with a magnification of the film frequency record, with its full complexity and perfectly distinct, widely differentiated elements a hundredth of a second long! This is preceded (in addition to material on the bird's singing habits) by the explanation of three leading facts. First, that different human ears may hear such diverse fractions of songs that two or more faithful annotations may be quite unlike. Second, that the song in question not only has its individual variations, but its evanescent or permanent day-by-day changes in the throat of a single bird. Third, that the finest human ear, even for the parts of the song which it does, in a sense, hear, can never hope to detect more than a fraction of the fluctuations which actually are uttered, as revealed by physical analysis.

One wonders, in passing, whether song, thus described, may not be the most delicately measurable "racial," or, better, *population* character yet discovered. This is a very important paper in the history of ornithology.—T. T. McC.

**58. Content, Meaning and Possible Origin of Male Song in the Brown Towhee.** Charles W. Quaintance. 1938. *Condor*, 40:97-101. Pairs of *Pipilo fuscus petulans* in the San Francisco region remain all the year on their territories; only the unmated male sings. Here song is "limited to mate-getting." "Since the niche of the Brown Towhee includes open grassy areas where it may both see and be seen, a continuous advertisement of its presence by vocal utterance would seem to be unnecessary." In the Spotted Towhee (*Pipilo maculatus*) "in which the habitat is chiefly brushy," mated "males sing throughout the nesting season."

#### POPULATION STUDIES

**59. Duck Nesting Studies, Bear River Migratory Bird Refuge, Utah, 1937.**—Cecil S. Williams and Wm. H. Marshall. 1938. *Jour. Wildlife Management*, 2:29-48. In 1560 nests of 9 species of ducks 14,204 eggs were laid and 9,998 (70 per cent) hatched. Four per cent were destroyed by predators, the Magpie (*Pica pica hudsonia*) being the chief enemy. Seven per cent were flooded—a small loss The Gadwall (*Chauliasmus streperus*), Cinnamon Teal (*Querquedula cyanoptera*), Pintail (*Dafila acuta tzitzihoo*), and Shoveller (*Spatula clypeata*) hatched between 80 and 85 per cent of all eggs laid; the Mallard (*Anas p. platyrhynchos*) hatched 60 per cent, Ruddy Duck (*Erismatura jamaicensis rubida*) 52 per cent and Red-head (*Nyroca Americana*) 26 per cent.

**60. Mosquito Control Operations on Tide Marshes in Massachusetts and their Effect on Shore Birds and Waterfowl.**—H. M. Bradbury. 1938 *Jour. Wildlife Management*, 2:49-52. In the Duxbury marsh, a favorable environment was created for Killifish (*Fundulus*) to enable them to take care of the mosquitoes. Special efforts were made to increase attractiveness of the marshes to birds and they were present in larger numbers in 1936 and 1937 than from 1931 to 1936. By "avoiding drastic drainage, mosquito control work on our tide marshes can be carried on successfully without causing injury to migratory bird habitat."

**61. Bird Life in Nevada with Reference to Modifications in Structure and Behavior.**—J. M. Linsdale. 1938. *Condor*, 40:173-180. Nevada is a high, barren plateau with much sunshine, much wind, and little rain. Adaptation of the avifauna to scarcity of plant cover is shown by greyish coloration, to the wind by longer wings, to scattered population by louder voice.

**62. Environmental Responses of Vertebrates in the Great Basin.**—J. M. Linsdale. 1938. *American Midland Naturalist*, 19:1-206. A much more detailed report dealing with more aspects, but reaching the same conclusions. Three species of amphibia, 13 of reptiles, and 47 of mammals are included, but most attention is given to the birds—152 species. The chief concern is with "problems of responses of the animals to their surroundings, including other organisms." The outline used as a basis divides the factors into Internal (genetic, sensory, hormonal, behavior patterns) and External (Physical—topography, climate, weather, light, vegetation, water, and Biotic—food, competition.)

Considerable attention was paid to the three species of nesting blackbirds—Yellow-headed (*Xanthocephalus xanthocephalus*), Red-winged (*Agelaius phoeniceus nevadensis*) and Brewer (*Euphagus cyanocephalus*). The first are closely restricted to nesting sites over water; they are polygamous, females apparently nesting when a year old and males not until two years; the egg quota is 3-4. The Red-wings are much more numerous and make a wider choice of nesting situations; they are polygamous with an egg quota of 4-5. "The success of a male in obtaining females in its territory seemed to depend almost entirely upon the suitability of the habitat for nest locations. A male with a thickly grown stand of strong, upright cattail stems would have as many as 6 females all actively nesting.

Another in a less suitable part of the same marsh might have only 1 female. At least 1 male kept a territory throughout a season where the sites for nesting were few, there being no tall vegetation, and not a single female settled there." Brewer's Blackbird shows the widest choice of nesting sites; is monogamous, the members of a pair showing strong attachment to each other; the egg quota is 5-6. "All 3 species were markedly colonial in nesting"; the first two are also territorial, the last apparently much less so.

**63. Preliminary Results of the Ornithological Exploration of the Dombes.**—(Premiers Résultats de l'Exploration Ornithologique de la Dombes.) Olivier Meylan. 1938. *Alauda*, 10:3-61. A great many water birds nest in the valley of the Saône. The author emphasizes the sociability of these birds; on each pond they tend to nest in close proximity. The Black-headed Gull (*Larus ridibundus*) has increased six times since 1909. Each colony nests in "villages" where the nests are very close together and the time of laying is practically synchronous. The Black-necked Grebe (*Podiceps nigricollis*) nests with the Gulls for its first brood and with the Whiskered Terns (*Chlidonias leucopareus*) for its second. The Great Reed Warbler (*Acrocephalus arundinaceus*) is territorial in most localities, but in one lake as many as 50 pairs nest in one hectare of thick phragmites, getting their food outside. In this locality 3 nests were found within 6 meters.

**64. Notes on the Stubble Quail and the Brown Quail in Victoria.**—R. S. Miller. 1938. *Emu*, 37:285-299. A somewhat rambling discussion of *Coturnix pectoralis* and *Coturnix coturnix* from the standpoint of gunner and farmer, based on great experience and making up in intimacy what it lacks in organization and detailed evidence. Scientifically interesting, like all such accounts for tropical and trans-equatorial regions, are brief vague discussions both of short but definitely migratory flights and of less periodic movements, perhaps including flights to Tasmania and other islands. The great extension of range with human settlement is reminiscent of the history of our Prairie Horned Larks. Economically a good case is made for the beneficial status of both birds,—rather as weed-seed eaters than as insect-eaters.—T. T. McC.

**65. The Relative Abundance of Birds.**—D. L. Serventy. 1938. *Emu*, 37:269-273. It is pleasant to see that Linsdale's exposition in this country of the percentage frequency method of organizing field observation, which has already had repercussions in South Africa, is now heard from in Australia in an analysis of the frequency of occurrence of fifty species in the course of 60 trips scattered over ten years through a thousand acre reserve of more or less primitive conditions near Perth. The author emphasizes certain difficulties, such as the question of seasonal visitants, and the incompleteness of the picture as representative of even the most limited geographic area. He does not plot the curve of the percentages, or compare the numbers of species included in the several percentage groups with other similar lists, which is a pity, as the most fundamental application of the method is the expression of what may be a biologic law or fixed curve of relative numbers at different frequencies, provided enough forms are present and enough data are available.—T. T. McC.

#### BOOKS

**66. The Bird. Vol. II. Sex and Reproduction.**—(Der Vogel. II. Band. Geschlecht und Fortpflanzung.) F. Groebels. 1937. Berlin. Gebrüder Borntraeger. 547 p. RM. 45. A remarkable example of industry; a compilation of information with over 5000 references. There are three divisions—Sex; Reproduction; Nest parasitism. The author as a physiologist is especially good on matters of hormones and the origin of secondary sex characters, while the description of physiological processes in the fertilization and incubation of the eggs is well given. The section on Parasitism is also good. In life history matters, however, the author's lack of a solid foundation of field experience is a decided detriment. He is too indiscriminate, quoting everything he reads—yet he has

missed some of the more important American work. He does not clearly differentiate between the rule and the exception, and the book has an anecdotal, confusing effect.

**67. The Log of Tanager Hill.**—Marie Andrews Commons. 1938. Baltimore. Williams and Wilkins Co. 244 p. \$2.50. On their beautiful estate in Minnesota Mr. and Mrs. Commons banded during 8 years no less than 18,024 birds of which 626 returned—3.4 per cent. The scientific data are given at the end of the book. The "Analysis of Return and Recovery Records" "is a summary of the records of 25 species that were recaptured at the station." There is a great deal of interest here, but unfortunately we are not always told how many of the "returns and recoveries" were banded as nestlings, adults, or immatures. The Appendix gives the band number, date of banding and date of return or recovery, but the usefulness of these data is greatly lessened by the lack of indication of the age of the bird when banded, or the sex (as in Cowbirds, Red-winged Blackbirds, Rose-breasted Grosbeaks, etc.)

Of 4652 Juncos (*Junco h. hyemalis*) only two "returns" were taken and "and it seems reasonable to suppose that they remained in the neighborhood all winter." The number of repeats was astonishing—21,799. A young Mourning Dove (*Zenaidura macroura marginella*) repeated 119 times, an immature Redwing (*Agelaius phoeniceus arctolegus*) banded July 1 repeated 243 times by September 28. A Song Sparrow (*Melospiza melodia juddi*) repeated 219 times in 61 days. "It was by this time in a battered condition, the crown of the head was bare of feathers and sometimes bleeding and the wings and tail feathers were frayed and broken." If only the Commons had weighed their birds, what a great amount of valuable information they would have obtained!

Most of the book is devoted to the diary in which not only the excitements in connection with the traps are told, but a lively account given of the changes in the weather and of the progress of the season in woods and garden. This will be enjoyed by many enthusiasts. The author well says, "One should be a poet to picture the life of a bird bander, a life in which every sense is stimulated, every perception is sharpened and each day becomes an adventure."

**68. The Social Life of Animals.**—W. C. Allee. 1938. N. Y. Norton. 293 p. \$3.00. A valuable book for the general reader giving a history of the recognition of the principle of co-operation in animal life, and describing in more or less detail various studies on the subject mostly made by the author and his students. General principles are given for the beginnings of social life: "accidental animal groupings" (as on a wharf piling) are kept together by a "slightly positive social inertia" and "the social force of toleration for the presence of others in a limited space." p. 43. "A decided advance is made when animals react positively to each other and so actively collect together, not primarily because the location is favorable or through environmental compulsion, but as the result of the beginnings of a social appetite. In early stages of such reactions, the movement together may come primarily because the collection of isopods or earthworms or starfishes are substitutes for missing elements in the environment." p. 44. It is suggested that "perhaps the same phenomenon accounts for the flocking tendency of many birds, as well as mammals on the equally monotonous grassy seas of temperate plains." p. 46. As to bird roosts, "we are concerned with a positive social appetite which grows stronger with the approach of darkness." p. 47.

Experiments are discussed on the effects of numbers with invertebrates, amphibia and fish, and cases cited in wild mammals and birds as to the lowest numbers of a given species that can maintain themselves. Darling's studies (See *Bird-Banding*, July '38, No. 54) on Gulls are cited, as well as the comeback of Laughing Gulls on Muskeget Island from 12 pairs, but the failure of the Heath Hen to recuperate from a greatly depleted population. "With many more or less social animals the group up to a certain size facilitates various types of behavior" p. 134. "This kind of social facilitation has been described for such diverse processes as breeding behavior, eating, working and learning," although learning is not always facilitated.

The chapter on Group Organization is rather disappointing, being devoted almost entirely to a discussion of "peck-order" in chickens, pigeons, parakeets, canaries and the Dionne quintuplets. It will be noted that all these birds were studied in captivity, i.e. when subjected to unnatural conditions. No mention is made of Goethe's and Kirkman's studies on Gulls, nor of Lorenz' on the Jackdaw, and the [Kumpan, nor of Friedmann's review of the subject in his chapter on "Bird Societies."

A bibliography of 129 titles and an appendix conclude this interesting and well-written book. The ornithologist will find much of value on fundamental viewpoints and on experiments in the laboratory, but little on the behavior of wild birds.

**69. Portraits d'Oiseaux.**—Jaques Delamain. 1938. Paris. Editions Stock. 209 p. 27 fr. A charming book treating of thirty-two species, not the most common that are known by nearly every one, but those a little less familiar. The list includes a variety of birds—the Lapwing, Bustard, Hawks and Owls and many passerines. The biographies are delightfully and sympathetically written, while information as to the scientific name, size, description, status and nesting habits is relegated to the Table of Contents at the end. Each biography is preceded by a full page painting by Roger Reboussin; most of these are excellent, while some are especially fine—the Great Spotted Woodpecker, Golden Oriole, Nuthatch, Stonechat, Chaffinch and Cirl Bunting. All in all a book well calculated to interest and delight a wide public.

Bent's "Life Histories of North American Birds of Prey" (Part 2). In Mr. Bent's latest volume,<sup>1</sup> published in August, 1938, the eleventh of his series of Life Histories of North American Birds, he writes of the falcons, the caracara, and the owls. This volume fulfills, perhaps even surpasses, the quality of excellence which the previous volumes, notably the one published a year ago, have led us to expect. In dealing with the Raptores, Mr. Bent is speaking of the birds he loves best and, after long years of study, he can speak of them as few other ornithologists can.

He follows conscientiously the nomenclature of the fourth edition of the A. O. U. Check-List. It is true, he sometimes expresses his personal opinion when it differs from the rulings of constituted authority (often temporary, as the past has shown) but modestly, never presses the point.

In his enthusiasm to present to the reader everything which is known of the life histories of the birds under consideration, Mr. Bent comes close to voluminousness in the treatment of certain species. As an instance of this fault, if it be one, he devotes over one hundred pages, nearly one quarter of the book, to two species, the Screech Owl and the Great-horned Owl with their multiplicity of races. This entails a good deal of repetition and goes slightly beyond the point where the different environments of races, causing a change in food and nesting habits, demand special mention.

Some of the life histories are unqualified masterpieces. Conspicuous among these are the chapters on *Bubo virginianus virginianus*, the Barred Owl and, one of the very best, the burrowing owls.

Mr. Bent has shown his usual unerring judgment in selecting from the literature and from the letters of his correspondents quotations which eke out his own observations and enhance the value of the articles. Examples of such quotations are the splendid essay-like notes of Joseph A. Hagar which bring the Duck Hawk, ferociously alive, onto the page, and the deliciously humorous bit from Coues (p. 391) showing the Burrowing Owl "gesticulating" on its little "eminence" like a "frothy orator" from a rostrum.

Mr. Bent has had assistance from a new contributor, Milton P. Skinner, whose familiarity with little-known western sub species, and whose skill in putting his knowledge on paper must have been very welcome.

<sup>1</sup> U. S. Nat. Mus., Bull. 170. Life Histories of North American Birds of Prey. (Part 2) Orders Falconiformes and Strigiformes. Smithsonian Inst., Washington, D. C., pp. 1-482, pls. 1-92. Supt. of Documents, Washington, D. C.



I note one misprint—on p. 114 line 23. I happen to know that “daring” should read “darling”. No one, I think, would call a bird which feeds largely on grasshoppers, daring.

In the later volumes of this series Mr. Bent has been reporting more and more records of banded birds. The advance of bird banding during the last few years has brought to our knowledge many unsuspected facts about the movements of birds, and in the present volume Mr. Bent reports those which are most significant regarding the species under his consideration. He points out, for instance, that a Snowy Owl may return repeatedly to a *winter* station south of its breeding range year after year. This reminds us of a similar habit of the White-throated and the Tree Sparrow learned through banding, years ago.

The illustrations (92 plates of photographs) are extremely well chosen. The photograph of the adult Snowy Owl (on plate 82) is, I can well believe, as fine a picture of a living bird as has ever been published.

The scenes of the book are various; they take in the vast sweep of the whole North American Continent, from, to quote Mr. Bent, “the wide, open, treeless plains and prairies” to the densest forests, and northward to the tundra and snowfields. The characters in the book are various too, from the fierce little shrike-like Pygmy Owl—a minute sprite—to the solemn monarch of the arctic.

Ornithologists will read Mr. Bent's book with respectful admiration, and laymen will find it bristling with thrilling adventure.—Winsor M. Tyler.

## BIRD DISEASES

(Reviews by Dr. Carlton M. Herman)

**Avian Hosts of the Genus *Isoospora* (Coccidiida).**—D. C. Boughton, R. B. Boughton and Joseph Volk. 1938. *Ohio Jour. Science*. 38:149-163. This paper contains a general discussion of the intestinal parasites of the genus *Isoospora* from birds, lists seven valid species and gives a check-list of the birds reported as hosts in the literature and in the senior author's experience. The parasite is recorded from 176 species of birds, representing 130 genera, 40 families and 9 orders. A bibliography of 29 titles is included.

**The presence and distribution of *Hexamita* sp. in Turkeys in California.**—W. R. Hinshaw, E. McNeil and C. A. Kofoid. 1938. *Jour. Amer. Vet. Med. Assoc.* 93:160. *Hexamita* is a protozoan parasite which has been previously described from the intestine of fish, amphibia, reptiles, mammals and several species of birds. A brief description of the parasite from young turkeys suffering from an enteritis is reported in this note which contains 13 references.

**A synopsis of the flagellate genus *Cochlosoma* Kotlan, with the description of two new species.**—Bernard V. Travis. 1938. *Jour. Parasit.* 24:343-351. A review of the genus *Cochlosoma*, its generic characteristics, systematic position and economic status. *Cochlosoma* is a protozoan parasite of the intestine of birds. It was first described from ducks in 1923. The author reports *C. anatis* from four species of ducks in Iowa and two new species: *C. picae* from a magpie in Idaho and *C. turdi* from a robin in Iowa. Very little is known of the effects of this parasite on the birds.

**A New Host and Locality Record for *Sarcocystis rileyi* (Stiles, 1893).**—Carl Gower. 1938. *Jour. Parasit.* 24:378. *Sarcocystis rileyi*, a parasite of the muscles of birds, is reported from seven ducks in Michigan, six of were identified as the Black Duck (*Anas rubripes*) a host previously not reported.

**Occurrence of Larval and Nymphal Stages of the Rabbit Tick, *Haemaphysalis leporis-palustris*, on Wild Birds from Cape Cod.**—C. M. Herman. 1938. *Bull. Brooklyn Ent. Soc.* 33:133-134. These ticks are reported from six species of birds at the Austin Ornithological Research Station. During a two-week survey Eastern Song Sparrows were found to be commonly infected (58 per

cent and as many as 29 ticks were collected from the head of a single Red-eyed Towhee.

**Epidemiology of Malaria in Eastern Red-wings (*Agelaius p. phoeniceus*).**—C. M. Herman. 1938. *Amer. Jour. Hyg.* 28:232-241. This paper is the summation of two summers of study at the Austin Ornithological Research Station. Two species of malaria were reported, *Plasmodium circumflexum* and *P. cathemerium*. Adult Red-wings were more often infected (60 per cent) than the young of the year (30 per cent.) Young birds did not become infected while on the nest. Fluctuations in the incidence of infection are explained by variations in mosquito density from year to year and by probable increase of infection during migration. Infection may be carried by other species of birds as well as the Red-wings.

**The Common Duck as a Convenient Experimental Host for Avian Plasmodium.**—Fruma Wolfson. 1938. *Amer. Jour. Hyg.* 28:317-320. Experiments demonstrate that the duck can serve as a convenient host for experimental studies on mosquito-borne bird malaria.

**Some Blood Parasites from Nebraska Birds, II.**—G. Robert Coatney and Evelyn West. 1938. *Amer. Midl. Nat.* 19:601-612. *Haemoproteus*, *Leucocytozoon*, *Plasmodium* and *Trypanosoma* are reported from 15 species of birds in Nebraska. Of 84 birds examined, 19 were infected while 39 birds of 20 species were negative by examination of blood smears. Three new species are described: *H. archilochnus* from Ruby-throated Hummingbird, *H. quiscalus* from Bronzed Grackle and *L. coccyzus* from Yellow-billed Cuckoo.

**Organisms of a Malarial Type in Ruffed Grouse, with a Description of the Schizogony of *Leucocytozoon bonasae*.**—C. H. D. Clarke, 1938 *Jour. Wildlife Management.* 2:146-150. The author's earlier assumption that *Leucocytozoon bonasae* may be associated in its occurrence in the grouse population with cyclic mortality is recapitulated. The life-cycle of the parasite in the avian host and seasonal variation in the localization of the various stages of the leucocytozoa is discussed. Parasites are more numerous during early summer, a fact which the author suggests is controlled by the bird's resistance. *Haemoproteus*, another parasite of blood cells, is also reported from the Ruffed Grouse.