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BRITISH BIRD BOOK

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200 PLATES IN COLOUR AND
NUMEROUS PHOTOGRAPHS,

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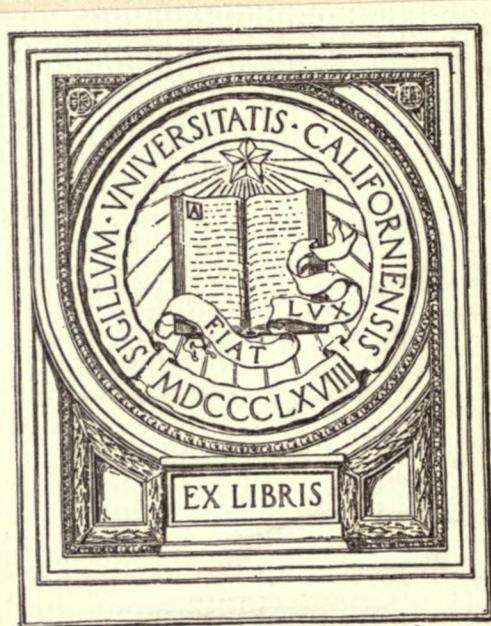
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A COMPLETE WORK ON THE BIRDS, NESTS
AND EGGS OF GREAT BRITAIN

London and Edinburgh ~ T. C. & E. C. JACK



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THE TITS

[ORDER: *Passeriformes*. FAMILY: *Paridae*.]

PRELIMINARY CLASSIFIED NOTES

UNIV. OF
CALIFORNIA

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON. E. L. TURNER.]

BRITISH LONGTAILED-TIT [*Aegithalus caudatus roseus* (Blyth). *Acredula rosea* (Blyth). Bottle-tit, bottle-jug, featherpoke, long-tailed pie, long-tailed capon, bumbarrel, mumruffin, miller's-thumb. French, *mésange à longue queue*; German, *Schwanzmeise*; Italian, *codibugnolo*.]

1. Description.—This bird may be readily distinguished by the combination of black and rose-colour in the plumage, and the very long tail. (Pl. 62.) Length 5.5 in. [139 mm.]. The centre of the crown is of a dull white, obscured by a more or less distinct tinge of dark brown occasionally striated with black; on either side above the eye runs a broad black band. The eyelid is surrounded by a ring of orange-yellow, and the ear-coverts are dull white, more or less distinctly marked by dark striations. The hind-neck and mantle are glossy black, the scapulars, lower back, and rump rose-coloured, more or less mottled with black. The lesser wing and tail-coverts, and the quills and tail feathers are black, the inner secondaries having broad, white outer margins. The three outermost tail feathers have a streak of white along the outer web and diagonally across the tip. The throat and fore-neck are white, the latter with more or less dusky striations, the remainder of the under parts being light rosy, the under tail-coverts inclining to chestnut. The sexes are alike. The juvenile plumage differs from that of the adult in being duller, the black areas having a rusty hue, while the rose-colour is wanting. [W. P. P.]

2. Distribution.—Our local race of this widely distributed species (which ranges across the Eurasian continent to Japan) is resident in the British Isles, and

probably also in Western France, the Pyrenees, and the Cantabrian chain. In Great Britain, though varying in numbers at times, it is found in most wooded districts, but avoids the mountains and moorlands. It also breeds on some of the wooded islands off the west coast, such as Skye, Mull, and Islay, and has been noted as breeding in every county of Ireland and is common in many districts. [F. C. R. J.]

3. Migration.—Resident within our area, and apparently performing nothing more than local movements. Thus in Wales it is to be found “journeying down the Conway Valley,” but is unknown at the light-stations round the coast (cf. Forrest, *Fauna N. Wales*, 1907, p. 102). In Ireland there is a single record of a flock of seven from the islet of Inishtrahull (nine miles north of Donegal) for 24th October 1895 (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 102). The extent to which it is non-migratory with us may in part be inferred from the following observation on “the effects of the intense frost of February 1895. About Palé and Conway the long-tailed tit was exterminated. In the latter district none were observed until the autumn of the same year, when a few appeared which were probably migrants from the east. In the Palé district long-tailed tits were not seen in any numbers for several years” (Forrest, *loc. cit.*). [A. L. T.]

4. Nest and Eggs.—Nesting-place: often in thick bushes or thorny hedges at about 3 to 6 feet from the ground, but many nests are also built at a considerable height in various species of trees, such as oaks, pines, birches, etc., especially when covered with lichen. The usual height seldom exceeds 30 feet, but instances are on record of nests as high as 50 feet. The nest is a marvellous piece of work: it is domed, with an opening high up on the side, and is built chiefly of mosses, woven together with cobwebs and hair or wool, covered externally with lichens and thickly and warmly lined with feathers, over 2000 of which have been found in one nest alone. (Pl. XXIV.) Both sexes work with the greatest assiduity at the task of building. Eggs usually 8 to 12 in number: the larger clutches of from 13 to 20 eggs are perhaps due to the presence of two females (cf. *Zoologist*, 1849, p. 2567; *British Birds*, i. pp. 32, 62; iv. p. 78). They are white, in some cases without markings, but generally spotted with light red, especially at the blunt end. (Pl. D.) Average of 100 eggs, $\cdot 55 \times \cdot 43$ in. [$14 \cdot 17 \times 11$ mm.]. The full clutch may be found from the middle to the end of April according to locality. Incubation probably lasts 12-13 days, and is, chiefly at any rate, performed by the hen, but both sexes roost in the nest. A second brood is certainly reared at times, if not as a rule; but late in the season the nests are not easy to find. [F. C. R. J.]

5. **Food.**—Insects and their larvæ. The young are fed on the same by both parents. [E. L. T.]

6. **Song Period.**—The species has no song. [E. L. T.]

BRITISH GREAT-TIT [*Parus major newtoni* Pražak. Tom-tit, oxeye, black-cap, billy-biter, bee-eater, nope, saw-sharpener, hickmall or hackmall].

1. **Description.**—The great-tit may readily be distinguished, even in the field, by the black head and throat enlivened by a large white spot on the cheeks, and the broad black band which runs down the middle of the sulphur-yellow breast and abdomen. The sexes are alike, and there is no seasonal change of coloration. (Pl. 65.) Length 5.75 in. [147 mm.]. The head, sides of the upper neck and throat are black with a metallic steel-blue gloss, enlivened by a large white spot covering the face and ear-coverts. The black of the under surface on the fore-breast forms a gorget, which, contracting slightly, runs down the middle of the breast and abdomen to form a broad band, widest on the abdomen, whence it contracts to run down the middle of the under tail-coverts, which else are white. This band is very conspicuous against the sulphur-yellow of the rest of the under parts. The nape is marked by a white spot passing backwards into greenish yellow and finally blending with the yellowish olive-green of the mantle. The rump, upper tail-coverts and tail are of a blue-grey colour, the tail feathers somewhat darker, and having black shafts. The outermost feather has the outer web and the greater part of the inner web white, while at the tip of the outer web of the penultimate feather is a spot of white. The wing-coverts are of a dull greyish blue, the major series having broad white tips, faintly tinged with yellow. The primaries have the outer webs deeply emarginate, the broad part of the web being dark grey-blue, the narrow white, while the secondaries have the outer web margined with greenish blue, the innermost with a broad margin of greenish white. The female differs from the male in her general lack of intensity of coloration. The juvenile plumage differs from that of the adult in that the black of the head and throat is replaced by a dark slate-grey, and the cheek spot is sulphur-yellow, like the sides of the upper neck. The rest of the upper parts are of a greenish grey, passing into slate-grey on the rump and tail. The under parts are sulphur-yellow and the black median band is but feebly developed. [W. P. P.]

2. Distribution.—The great-tit is found throughout the whole of the Palearctic region, but the British race is confined to the British Isles. Here it is very generally distributed in all wooded districts of Great Britain, but becomes scarce in N. Scotland and is only a straggler to Sutherland and Caithness. On the west it breeds in some of the better-wooded islands of the Inner Hebrides and probably also in Skye. It is common in the Isle of Man, and widely distributed in all the wooded parts of Ireland, breeding in every county. [F. C. R. J.]

3. Migration.—Our local race appears to be stationary or subject only to local movements. [A. L. T.]

4. Nest and Eggs.—Nesting-place: usually in a hole of some kind, in a tree, wall, building or occasionally in cliffs. In default of more natural sites all kinds of artificial openings are made use of, such as nest-boxes, pumps, letter-boxes, flowerpots, old tins, etc., while in some cases nests have been hollowed out of the foundations of squirrels' dreys and nests of large birds, crows, rooks, magpies, and sparrow-hawks. Instances are also on record of open nests in thick hedgerows and inside those of other birds, such as thrush, blackbird, or hedge-sparrow. The nest is composed of moss mixed with a few bits of dry grass, wool, or roots, lined with a thick layer of felted hair or rabbit's fur. (Pl. xxiv.-xxv.) Eggs usually 6 or 7 to 11, but nests have been recorded with various numbers up to 17, though in all probability some of these were the produce of more than one hen. In colour they are white, spotted lightly or richly with two shades of red-brown. They have been also found without markings. (Pl. D.) Average size of 100 eggs, $\cdot 70 \times \cdot 53$ in. [$17\cdot 98 \times 13\cdot 5$ mm.]. They are laid from the end of April onward, and full clutches may usually be found about the first to the third week in May according to latitude. The eggs are frequently covered up before incubation begins. Naumann states that both sexes incubate, but more recent observations seem to show that this duty is performed by the hen alone (cf. *Zoologist*, 1910, p. 207, etc.). The period is given as 12-13 days (Steele-Elliott, Kingsley Siddall), 14 days (W. Evans). The rearing of a second brood is exceptional in England. [F. C. R. J.]

5. Food.—Insects and their larvæ; also nuts, seeds of conifers, corn, occasionally fruit and green peas. The nestlings are fed by both parents entirely on insects and their larvæ. [E. L. T.]

6. Song Period.—From middle of August to middle of June: the period during which it sings regularly is from the end of December or early January



Photo by E. L. Turner

Longtailed-tit at its Nest



Photo by F. E. Daniel

Longtailed-tit's Nest in the fork of a tree



Photo by Riley Fortune

Great-tit's Nest in a hole in a wall. Stone removed to show Nest



Photo by Riley Fortune

Great-tit's open Nest built on an old song-thrush's nest in a tangle of honeysuckle. Very unusual site

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to the beginning of June : only occasionally during the rest of the period, except in September and early October, when in some years it sings frequently (C. J. and H. G. Alexander, *Br. Birds*, iv. p. 274). [E. L. T.]

CONTINENTAL GREAT-TIT [*Parus major major* Linnæus.
French, *mésange charbonnière* ; German, *Kohlmeise* ; Italian, *cinciallegra*].

1. Description.—This is regarded by some authorities as a separate subspecies. It differs from the British form in the greater size of the beak, a difference which can only be appreciated by comparing a large series of specimens. Whether this is enough to entitle it to sub-specific rank may well be a matter of doubt. [W. P. P.]

2. Distribution.—Throughout the Continent of Europe, from the Arctic Circle to the Mediterranean, and also in Western Siberia to the Altai, but the Greek form has recently been separated, and local races also occur in Corsica and Cyprus as well as in North-west Africa, Persia, and Eastern Asia to Japan. [F. C. R. J.]

3. Migration.—There is in autumn a considerable immigration of this race from Northern Europe to the eastern seaboard of Great Britain. In some seasons very marked influxes have been noted. One such, in 1878, was paralleled by a similar great passage over Heligoland. In spring there is a corresponding return journey (cf. Saunders, *Man. Brit. B.*, 2nd ed., 1899, p. 109 ; Nelson, *B. of Yorks.*, 1907, p. 108 ; and Gätke, *Vogelwarte Helgoland*, Eng. trans., 1895, p. 413). There is no evidence of cross-Channel migrations, and in parts of the South of England the *species* is described as a "true resident" (cf. Ticehurst, *B. of Kent*, 1909, p. 77). The western parts of Great Britain, also, do not appear to be reached by the Continental birds as a rule, for no real migration is known to occur there (cf. Forrest, *Fauna N. Wales*, 1907, p. 103 ; and Gladstone, *B. of Dumfriesshire*, 1910, p. 38). Nor is there any evidence of transmarine migration to or from Ireland, apart from a few October records from the Wexford lights (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 30). A gregarious migrant. [A. L. T.]

5. Food.—Probably does not differ in its feeding habits from the British form. [E. L. T.]

BRITISH COAL-TIT [*Parus ater britannicus* Sharpe and Dresser. Coalhood, little blackcap, ground-tit. French, *mésange noire*; German, *Tannenmeise*; Italian, *cincia mora*].

1. Description.—The coal-tit may be recognised at once by its black head and throat and the large white patch on the back of the neck and side of the head. The sexes are alike. (Pl. 63.) Length 4·25 in. [107 mm.]. The black of the head, throat, and fore-neck has a metallic blue sheen, the effect of which is heightened by the large patch of white which extends from the nape backwards to the base of the neck, and the equally conspicuous white patch which covers the whole side of the head, and the side of the neck. The mantle is olive-grey, with a tinge of rufous on the rump. Wings like the mantle; but the median and major coverts have white tips forming a double wing-bar. The secondaries have narrow, dull white outer margins, the innermost white tips. The breast and abdomen are of a dull white, the flanks a bright rufous buff. The female is slightly duller than the male. The juvenile plumage differs from that of the adult in that the black areas are of dull slaty black hue, while the white of the hind-neck, the sides of the head and neck, and of the breast is replaced by pale sulphur-yellow. [W. P. P.]

2. Distribution.—The British race of this species is confined to the British Isles, and it is fairly general throughout Great Britain, but is rare in Caithness. It also inhabits Skye and the wooded islands of the Inner Hebrides, and occurs in the Isle of Man, while in Ireland it has been found breeding in every county. It shows a strong predilection for coniferous woods, and has apparently increased its range with the growth of plantations. [F. C. R. J.]

3. Migration.—Resident within our area, but performing local movements of considerable but unknown extent on the approach of winter. On Heligoland the Continental coal-tit occurs as a very uncommon migrant (cf. Gätke, *Vogelwarte Helgoland*, Eng. trans., 1895, p. 414), but there is no evidence of overseas migration of this race to or from the British Isles. A coal-tit was obtained on the Isle of May (Firth of Forth) on 1st October 1908 (cf. Baxter and Rintoul, *Annals of Scot. Nat. Hist.*, 1909, p. 12) and two on the Bass Rock on 28th September 1908 (cf. Evans, *tom. cit.*, p. 49): the first belonged to the British race, but the Bass Rock examples were undetermined. [A. L. T.]

4. Nest and Eggs.—Nesting-place: as a rule low down in an old stump, or in a hole in a hedge bottom or wall. Occasionally it has bred in the foundation of an old magpie's or squirrel's nest, and once at least in an old thrush's nest. Gener-

ally, however, the nest is either in or close to the ground. It is almost always in a hole and consists of moss, upon which is placed a thick layer of felted hair and rabbit's down, or wool. Occasionally feathers are used as lining material. (Pl. xxv.) Building appears to be carried on by the hen alone, at least I have no record of the male assisting in the work. Eggs 7 to 11, rarely as many as 13, white, sometimes freckled with pale red spots and at other times with dark red spots tending to a zone. (Pl. D.) Average size of 100 eggs, $\cdot 59 \times \cdot 45$ in. [$15 \times 11\cdot 6$ mm.]. Laying begins about April 20th in the south and extends to two or three weeks later further north. Incubation is chiefly carried on by the hen, though Naumann states that both sexes take part, and lasts about 14 days, but exact observations are lacking. Apparently only one brood is reared as a rule. [F. C. R. J.]

5. Food.—Chiefly insects. In autumn and winter, the species feeds also on nuts and seeds of conifers. The nestlings are fed by both parents entirely on insects and their larvæ. [E. L. T.]

6. Song Period.—Similar to that of the great-tit (*i.e.* from mid-August to mid-June), but generally sings more in autumn, and may sing occasionally during most of the summer months (C. J. and H. G. Alexander, *Br. Birds*, iv. p. 274). [E. L. T.]

IRISH COAL-TIT [*Parus ater hibernicus* Grant].

1. Description.—The Irish coal-tit is at once distinguished from the typical British coal-tit in that the white neck patch and the white area of the side of the head and neck, characteristic of the typical bird, are replaced by sulphur-yellow; further, the neck patch is smaller. Similarly, the whitish area of the breast and abdomen in the Irish bird have a strong wash of sulphur-yellow. The back is greener; while the rump and upper tail-coverts are strongly tinged with cinnamon, as also are the flanks (W. R. Ogilvie Grant, *Bulletin British Ornith. Club*, xxvii. p. 36). [W. P. P.]

2-3. Distribution and Migration.—Coal-tits have long been known to be common residents in Ireland, breeding in every county, but it was not till late in the year 1910 that Irish specimens were compared by Mr. Ogilvie Grant, with a series from other parts of the British Isles and the differences pointed out. Up to the present specimens have been obtained from Dublin, Wexford, Waterford, Westmeath, and Sligo, but examples apparently of the British form were also secured in Co. Down in January 1904, though it is probable that the latter were

only winter visitors from the opposite coast. There is no evidence of any migratory movement on the part of this race. [F. C. R. J.]

4. Nest and Eggs.—Ussher says that the nest is usually built in the hole of a stone-faced bank, and is lined with a thick bed of rabbit's fur, sometimes mixed with cowhair, feathers being only exceptionally used, upon a foundation of green moss. He also notes that the male assists the female in building (*Birds of Ireland*, p. 31). The eggs are laid in April and May, and a clutch of 9 eggs from Co. Waterford in the British Museum was taken on 15th May. [F. C. R. J.]

5. Food.—Chiefly no doubt insects. Ussher notes that it feeds on the alder, and during winter frequents these trees in company with other tits, goldcrests, creepers, and redpolls. He has seen one attack the huge cone of *Picea nobilis*, making the scales fly and leaving nothing but the main stalk. Its chief haunts are, however, the fir plantations, where it finds a supply of food at all seasons. (See Ussher, *Birds of Ireland*, p. 31.) The young are fed on insects like the other *Paridæ*. [F. C. R. J.]

6. Song Period.—Sometimes begins at the end of January and may be heard every month till the end of June (Ussher, *loc. cit.*). [F. C. R. J.]

MARSH-TIT [*Parus palustris* Linnæus. Willow-biter, blackcap, coal-head. French, *nonnette*; German, *Sumpfmeise*; Italian, *cincia bigia*].

1. Description.—The marsh-tit is readily distinguished in the field from the coal-tit by the absence of the white area on the hind-neck, and absence of the white wing bars, but it is less readily distinguished from the willow-tit. The marsh-tit has the crown, nape, and hind-neck glossy black, the sides of the head dull white inclining to rufous on the sides of the neck, while the back is olive-brown, slightly rufous on the rump. The wings and tail are ash-brown, the remiges having paler free edges. The chin and throat are black, and the breast and abdomen dull white, shading into buff on the flanks. The sexes are alike. (Pl. 63.) The juvenile plumage differs from that of the adult only in being conspicuously duller. Length 4·5 in. [116 mm.]. [W. P. P.]

2. Distribution.—This species is found throughout the greater part of Europe, but is subject to considerable variation and has been divided into many sub-species. Our British birds are resident and form a local race, the British marsh-tit, *P. palustris dresseri*, Stejneger, which is confined to Great Britain, while races from Scandinavia, Italy, and the east, west, and middle portions of the great European plain have



Photo by F. E. Daniel

Great-tit's Nest in a letter-box



Photo by Riley Fortune

Marsh-tit's Nest in a sunk fence. Stone removed to show Nest



Photo by F. E. Daniel

Coal-tit's nest-hole in a tree



Photo by F. E. Daniel

Same Coal-tit's Nest with front cut away

been described as distinct. In Great Britain it is rather local and decidedly scarcer than the other tits, but is fairly numerous in Kent and Pembroke, though scarce in N. Wales. In Scotland its status is as yet uncertain, all records from the Moray and Forth areas appear to refer to the willow-tit, and recent observations seem to point to its absence altogether from Scotland (see H. F. Witherby, *Br. Birds*, iv. p. 284), while in the north of England its presence requires authentication. It is absent from Ireland. [F. C. R. J.]

3. Migration.—Resident: there is no evidence of anything more than local movements. One of the Continental races of this species has occurred only once on Heligoland, although migratory on the neighbouring portions of the mainland (cf. Gätke, *Vogelwarte Helgoland*, Eng. trans., 1895, p. 416). [A. L. T.]

4. Nest and Eggs.—As a rule the nests of the marsh-tits may be distinguished from those of the willow-tits by the following characters. They are generally placed in natural holes, only slightly enlarged by the birds in decayed trees, old hedge stumps, etc. The nest is comparatively bulky and is built of moss, with a thick lining of felted rabbit's down and animal hair or vegetable down as lining, but not feathers. Any chips of decayed wood are removed by the old birds. (Pl. xxv.) The share of each sex in building seems not to have been recorded. Eggs 7 or 8 as a rule, but sets of 9 to 12 are said also to have been found. They are white, sometimes lightly freckled with pale reddish and at other times boldly marked with dark red-brown spots. (Pl. D.) Average size of 47 eggs, $\cdot 61 \times \cdot 48$ in. [$15\cdot 6 \times 12\cdot 2$ mm.]. The laying season begins late in April in the south and early in May further north. Incubation lasts about 13 days, and the sitting bird is the hen in those cases where the sex has been noted. A second brood appears to be sometimes reared. [F. C. R. J.]

5. Food.—Chiefly insects. In autumn and winter it feeds largely on berries, beech-mast, nuts, seeds of the larch, and thistle. The young are fed by both parents on insects and their larvæ. [E. L. T.]

6. Song Period.—Occasionally in November and December: frequently from early January to end of March or early May. Also record in June, July, and October. (C. J. and H. G. Alexander, *Br. Birds*, iv. p. 274.) [E. L. T.]

BRITISH WILLOW-TIT [*Parus atricapillus kleinschmidti* Hellmayr.]

1. Description.—The willow-tit (Pl. 63) differs from the marsh-tit in that the black area of the head and neck is without gloss and the flanks are slightly more

rufous, while the tail feathers become markedly shorter as they approach the outermost members of the series, so that the tail, when partly closed, is conspicuously rounded along its free edge, while in the marsh-tit the tail feathers are of equal length, save the outermost, which is slightly shorter than the rest. [W. P. P.]

2. Distribution.—As it is only comparatively recently that the specific distinctness of this species has been recognised, its distribution is still very imperfectly known. Willow-tits are found not only throughout the Palæarctic region, but also in the Nearctic region. Our British local race is, like the British marsh-tit, confined to Great Britain, and has now been found in Kent, Sussex, Surrey, Hants, Wilts, Herts, Oxford, Berks, Middlesex, Bucks, Northants, Cambridge, Gloucester, Suffolk, Lincoln, Stafford, and North Wales, while specimens have been obtained in the Spey, Tweed, and Forth areas in Scotland, and recently in Renfrew and Kirkcudbright, so that it seems possible that it entirely replaces the marsh-tit in Scotland (H. F. Witherby, *Br. Birds*, iv. p. 284). [F. C. R. J.]

3. Migration.—One authority states that it 'is evidently stationary all the year round' (Hartert, *Brit. B.*, i. p. 215). We have really little definite information, but it is probable that any state of affairs widely different from that which holds in the case of the marsh-tit would have brought the present species earlier into evidence. [A. L. T.]

4. Nest and Eggs.—The characters by which the nest of the willow-tit may be distinguished from that of the marsh-tit appear to be as follows: The nest-hole is generally excavated by the birds in soft and rotten wood, and ends in a nest chamber, which is roughly spherical. Very little nesting material is used, merely a few bits of fibre of decayed wood and some hair, while the chips are often left lying below the hole, instead of being carefully removed. We have no information as to the share of each parent in the work. Eggs 7 to 9 in number, white with red-brown spots, which seem in some cases to be bolder and richer than the markings on marsh-tits' eggs. Average size of 17 eggs, $\cdot 60 \times \cdot 49$ in. [$15\cdot 27 \times 12\cdot 4$ mm.]. Full clutches may be found about May 10-16. The incubation period is probably about 13 days, and, as far as is known, one brood is reared. [F. C. R. J.]

5. Food.—Chiefly insects, as far as is known. The young are fed by both parents, presumably on the same. [E. L. T.]

6. Song Period.—From January to April, and again from July to September (*British Birds*, iv. 146, C. J. Alexander). [E. L. T.]

BRITISH BLUE-TIT [*Parus caeruleus obscurus* Pražak. Tom-tit, blue-cap, billy-biter, pickcheese, maup].

1. **Description.**—The small size of this bird, the blue and green of the upper, and the yellow of the under parts will suffice at once to distinguish it from all other British birds. The sexes are alike, and there is no seasonal change of coloration. (Pl. 64.) Length 4·3 in. [110 mm.]. The crown is of a cobalt blue darkening from before backwards, and encircled by a narrow band of white, starting from the forehead, and faintly tinged blue. The lores are black, and a similar but very narrow black line runs backwards from the eye to join a broad band of dark ultramarine blue, which, starting on the nape runs downwards behind, and beneath the ear-coverts to join a bluish-black patch on the throat, thus encircling the ear-coverts and cheeks which are white. The scapulars and interscapulars are of a rich green inclining to yellow, and fading in the rump into pale yellowish green. The upper tail-coverts and tail are ultramarine. The wing-coverts are also ultramarine, those of the major series tipped white, forming a bar across the wing. The remiges are of a darker ultramarine than the coverts, especially on their inner webs, which are nearly black; the innermost secondaries are tipped with white. The fore-breast and flanks are of a greenish lemon-yellow, while the mid-breast has a patch of dark ultramarine, running downwards towards abdomen. Legs and toes bluish grey. The juvenile plumage differs from that of the adult in having the upper parts olive-green and grey in place of blue, the cheeks yellow in place of white, and the under parts wholly yellow, lacking the black area on the breast. [W. P. P.]

2. **Distribution.**—Blue-tits are distributed over the greater part of the Western Palæarctic region, but are subject to considerable local variation and have been divided into numerous sub-species. Our British form is confined to the British Isles. In Great Britain it is very widely distributed and only becomes rare in absolutely treeless districts and in the extreme north of Scotland, but has been recorded as breeding in Sutherland and Caithness. It breeds in Skye and in some of the wooded Inner Hebrides, but is absent from the Outer Hebrides, Orkneys, and Shetlands as a breeding species. It also nests in the Isle of Man, and in Ireland is very numerous and widely distributed, and has been found breeding in every county. [F. C. R. J.]

3. **Migration.**—Our local race does not appear to be migratory. [A. L. T.]

4. **Nest and Eggs.**—The nest is almost invariably placed in a small hole of some sort, usually in a tree or wall, but also occasionally in all kinds of places,

letter-boxes, pumps, old cans, street lamps, flowerpots, etc. A few cases of nests in holes of banks are on record, and in default of holes, old nests of other species of birds have been relined and utilised, while the nest has also been found in the bottom of a rook's nest. It is composed of moss and dead grass, with a thick felted lining of hair and wool and generally a good many feathers. (Pl. 64.) Apparently both sexes take part in building. Eggs usually from 7 or 8 to 12 in number, and probably in those cases where from 17 to 24 eggs have been found in one nest, two hens have contributed their quota. They are white, finely spotted or speckled with light red-brown, sometimes with a zone or cap, and occasionally unmarked. (Pl. D.) Average size of 100 eggs, $\cdot 60 \times \cdot 46$ in. [$15\cdot 3 \times 11\cdot 9$ mm.]. Eggs may be found from the end of April in the south to about the third week in May further north as a rule. Incubation lasts 13-14 days (W. Evans), and according to Naumann both sexes incubate in turn. Only one brood is raised as a rule. [F. C. R. J.]

5. Food.—Insects, many of which are injurious to man; also occasionally buds and fruit. In winter it feeds largely on nuts, acorns and seeds of the larch. The young are fed by both parents on insects and their larvæ. [E. L. T.]

6. Song Period.—About the same as the great-tit (*i.e.* from mid-August to mid-June), but it sings rather more in August and less in September and October than that species (C. J. and H. G. Alexander, *Br. Birds*, iv. p. 275). [E. L. T.]

CONTINENTAL BLUE-TIT [*Parus cæruleus cæruleus* Linnæus. French, *mésange bleue*; German, *Blaumeise*; Italian, *cinciarella*].

1. Description.—Differs from the British species, according to Dr. Hartert, in being brighter, more yellowish green on the back, in being generally rather larger, in having a comparatively more slender beak, and the white tips to the inner secondaries larger. [W. P. P.]

2. Distribution.—This race, which only visits our shores on migration, is widely distributed over the Continent of Europe, except in the north of Scandinavia and Russia, while in Corsica, North-west Africa, the Canarian group, and probably the Urals, as well as in Western Asia, it is replaced by other races. [F. C. R. J.]

3. Migration.—The autumn and spring movements of this race to and from the east of Great Britain correspond closely with those already described for the great-tit. Indeed, the two species very frequently travel in company, and the blue-tit also participated in the specially marked migrations on Heligoland and our own east coast, in the autumn of 1878 (see *antea*, p. 175). As regards Ireland, the Con-

tinental blue-tit has occurred on the Tearaght Light (off Kerry), but there is no other evidence of transmarine migration to or from that country. The bird is a gregarious and, according to Gätke, a diurnal migrant (cf. Saunders, *Man. Brit. B.*, 2nd ed., 1899, p. 109; Nelson, *B. of Yorks.*, 1907, p. 108; Gätke, *Vogelwarte Helgoland*, Eng. trans., 1895, p. 416; and Ussher and Warren, *B. of Ireland*, 1900, p. 32). [A. L. T.]

SCOTTISH CRESTED-TIT [*Parus cristatus scoticus*, Pražak. French, *mésange huppée*; German, *Haubenmeise*; Italian, *cincia col ciuffo*].

1. Description.—The crested-tit may be readily identified by the long black, white-tipped feathers of the crown, and the large area of white on the sides of the head and neck. The sexes differ but slightly. There is no seasonal change of coloration. (Pl. 65.) Length 4·5 in. (1·16 mm.). In the middle the crown feathers are considerably elongated, tipped with white, and form a conspicuous erectile crest. The forehead, side of the head, and neck are white, relieved firstly by a black line running backwards from the eye, and downwards to partly encircle the ear-coverts, and secondly, by a black band running from the nape downwards to serve as a border to the white neck patch, terminating finally in a large gorget of black, covering the fore-neck and throat. The upper parts are of a warm olive-brown, or greyish brown, the wings and tail marked by greyer, while the inner secondaries have pale tips. The breast and abdomen are white, the flanks and under tail-coverts buff. Legs and toes lead colour. The female differs from the male in having a slightly shorter crest, and a little less black on the throat. The juvenile plumage resembles that of the adult, but the black on the crown is devoid of gloss, and the white tips to these feathers are but slightly developed; the crest, too, is less developed. The upper parts are conspicuously darker and greyer, and the white cheeks have a buff tinge. The under parts are duller than in the adult. [W. P. P.]

2. Distribution.—This is another species which is subject to much local variation. In the British Isles it is resident in a very restricted area; in fact it may roughly be said to be confined to the basin of the Spey, although recently it has somewhat extended its range. Formerly it was only met with in an area 30 miles long and varying from 7 to 10 miles wide (Harvie-Brown and Buckley, *Vertebrate Fauna of the Moray Basin*, i. p. 255), but of late years this district appears to have become congested and a process of gradual expansion has taken place (*Vertebrate Fauna of the Tay Basin and Strathmore*, pp. 93-4). [F. C. R. J.]

3. Migration.—Resident within the narrow confines of its Scottish area indicated above. In other parts of the British Isles it is only a rare accidental visitor. Of records that can be considered reliable, two are for the south of Scotland, and the remaining few for the east and south of England (cf. Gurney, *Zoologist*, 1890, p. 210). That some at least of these wanderers are of Continental origin is practically certain. But the species is markedly non-migratory: it has occurred only once on Heligoland (cf. Gätke, *Vogelwarte Helgoland*, Eng. trans., 1895, p. 418). [A. L. T.]

4. Nest and Eggs.—Nesting-site: usually in a hole or crevice of a decayed stump of a pine-tree, but also occasionally in holes of alders and birches, and sometimes in holes of fences and in foundations of crows' nests. The nest is built of dry moss, with an inner layer of deer hair and a lining of hare's down and sometimes wool, feathers, or vegetable down. Whether both sexes share in building is apparently not recorded. Eggs as a rule only 5 or 6, quite exceptionally 7 or 8, white, boldly spotted generally with a zone or cap at the big end with dark chestnut-red. They are far the handsomest eggs of any of the tits, and it is rare to find a poorly marked set. (Pl. D.) The usual time for eggs is about the end of April or early in May. Observations on the incubation period and share of the sexes appear to be wanting. Average size of 46 Scotch eggs, $\cdot63 \times \cdot49$ in. [$16 \times 12\cdot5$ mm.]. Probably a single brood only is reared. [F. C. R. J.]

5. Food. Insects and their larvæ, small seeds and berries (Saunders): said to feed on juniper berries, as well as insects and small seeds (Seebohm). The young are fed by both parents on insects. [F. C. R. J.]

6. Song Period.—The species has no song. [E. L. T.]

The following sub-species are described in the supplementary chapter on "Rare Birds":—

White-headed long-tailed tit, *Ægithalus caudatus caudatus* (Linnæus).

Continental coal-tit, *Parus ater ater* Linnæus.

Northern willow-tit, *Parus atricapillus borealis* Selys-Longchamps.

Continental crested-tit, *Parus cristatus cristatus* Linnæus, or *P. cristatus mitratus* Brehm. (The few specimens on record have never been critically examined.)

[F. C. R. J.]

LONGTAILED-TIT

[E. L. TURNER]

The longtailed-tit is at once distinguished from other titmice by its tail, which is three-fifths of the bird's entire length. This graceful appendage consists of long, slender feathers, so graduated that the two outer ones are only about one-third the length of the middle pair. No other member of the Tit Family is quite so charming in all its ways as this most accomplished gymnast of the troupe. During the wonderful aerial performances in which this agile bird indulges, its long tail serves the same purpose as a human acrobat's balancing-pole. There is nothing in the way of topsy-turvy tricks that the longtailed-tit cannot do, while his merry "zee, zee, zee" resounds from the highest tree-tops, where as an acrobat he is unrivalled.

When flying in the open, this bird seems to hurl himself through space as if he were an animated pendulum which had somehow attained a horizontal position, and momentarily taken leave of its senses—mad with a perfect riot of joy. The small, rounded body, suffused with a delicate flush of pink, looks altogether too frail a thing for a rough-and-tumble life amongst tumultuous pine-branches tossed hither and thither by rude winter winds. Yet the longtailed-tit is hardy enough and adventurous, roaming far and wide in search of food and frolic.

During the winter months little parties of longtailed-tits travel about from place to place, often in company with goldcrests, coal and marsh-tits, similarity of tastes necessarily drawing these species together, as they are more strictly insectivorous than others of their ilk. But there is no regularity about the visits of these winter companies of longtailed-tits: they apparently come from nowhere and stay a few hours or maybe days, then pass on; and perhaps no more will be seen in the neighbourhood for some time. Every day

for a week, in December 1910, a little party of seven were to be seen hunting for insects amongst the bare lichen-covered branches of a certain group of oak-trees I passed daily; then they disappeared. Three weeks later these trees were again invaded by a family party. Herein they differ from other titmice, which will generally be found frequenting certain favourite spots at some hour of the day. Evidently longtailed-tits believe in "seeing life," and refuse to become merely parochial like great and blue-tits. Nevertheless, when spring comes round again, these little wanderers return with almost unfailing regularity to the vicinity of their old homes, provided their nests were not molested the previous season.

Pairing takes place early; and it is not at all unusual to find a complete nest at the end of March before the hedgerows are green. Even then, this most aesthetic building may be overlooked, so completely does it tone with old gnarled and lichen-covered thorn-hedges, which are often a favourite habitat of the longtailed-tit. The long oval, or bottle-shaped nest is a unique and very beautiful construction, the building of which takes ten or twelve days to complete; for every tiny bit of material used is woven together with infinite patience and skill.

On April 2, 1908, I found a nest as usual in a certain group of gorse-bushes on the outskirts of a garden where birds were loved and unmolested. The nest was then one and a half inches high, open and cup-shaped like a chaffinch's. The next three days were spent in watching the growth of this dwelling. Sheep's wool—combed and carded till delicate as spun cobweb or cocoon silk—formed the basis of its structure; yet so compressed and felted together that the whole building was water-tight and impervious to draughts. The moulding of the interior was one of the prettiest sights I have ever seen. Each time one of the tiny builders brought a bit of material, whether moss, lichen, or a single feather, this was inserted somewhere in the wall of the nest; then, with bill and claws, loose ends of wool were "combed" afresh, till the added substance was imbedded in fine

Plate 62

Longtailed-tits building their nest

By A. W. Seaby



silken strands. Any disarrangement of the lining, however, was tidied up and smoothed by pressure of the bird's breast, before he, or she, flew away; for both sexes worked equally hard. In an incredibly short space of time the rounded body of the bird described a complete circle inside the nest, after which its long tail swept round the curve to give a finishing touch. To the onlooker this carefully graduated tail, spread fan-like for a moment, seemed endowed with a delicacy of touch almost equal to that of the human hand. Building operations commence at dawn and continue till dusk. Yet so minute are the scraps of material brought, and so exquisite the workmanship, it is not to be wondered at that the structure takes many days to complete.

When the dome is added we can only suppose that the interior of the nest continues to be shaped in the manner described above. The top half is completed more rapidly than the lower, because both birds are able to work together—one on the exterior and the other on the interior of the home. Sometimes the tiny builders have to go far afield for materials, and as many as 2379 feathers were found in a nest described by Weir; while I have gathered up sufficient from the remains of a nest wantonly destroyed to supply my tame squirrels with feather beds for the winter—an unwonted luxury.

I was absent from home some days after those spent in watching the construction of the nest described above, and on my return I found that very little progress had been made; moreover, the half-built walls were rough and untidy as if clawed by a cat. Before long the reason of this was obvious. The tits had forsaken their nest, and were building another in a tall holly-hedge about two hundred yards away; using the materials employed in the first home for the construction of the second. Eventually this was completed, and they hatched off their brood in safety. Apparently carpet-beating, necessitated by a spring-cleaning orgy, disturbed the serenity of my tits and induced them to move.

Sometimes longtailed-tits build high up in the fork of a tree, where the nest so exactly matches the lichen-covered branches that

only a practised eye would detect its presence. Usually, however, thick hedges and gorse-bushes are their favourite habitat: the whole structure is then so woven amongst twigs that it cannot be detached without cutting away part of the bush. These nests vary considerably in length, some I have found measuring about five inches, others nearly seven.

There is a common error afloat that the longtailed-tit builds this long deep nest simply for the convenient stowing away of its lengthy tail; but this is not the case. The warm, elongated, bottle-shaped nursery is intended to shelter from eight to ten fairy-like balls of down, each one more or less energetic. If either parent settles down to brood, the tail—which certainly requires some arranging—is turned up over the owner's back. When the young are half-fledged, if you happen to catch one of the old birds in the nest filling up the entrance like a small stopper, the tail is very visible, sometimes even projecting beyond the nest. This is also the case when the hen—who broods entirely for some days after the nestlings are hatched—raises herself up to receive food from her mate. When administering food to the young she stands on tip-toe, bends down and feeds the little ones without greatly inconveniencing herself, or disarranging her tail, which is merely thrust a little further forward out of the nest. During the earlier stages of incubation, the length and thickness of the nest must greatly assist the parent in her work. No doubt these air-tight walls retain much of the heat generated by the tiny mother, otherwise she could not possibly hatch out such a number of eggs. Nevertheless, if I were sanitary inspector in the bird world, I should condemn this beautiful nursery as faulty in construction. Though quite water-tight when the brooding bird blocks the entrance, yet, after a deluge of rain, it occasionally happens that the nest is filled with water, in which case the eggs or young are drowned in their own home. Whether or not this only occurs when one or other of the adult birds has been destroyed, I cannot say. Anyway, the dwelling should be provided with some means of carrying off superfluous moisture,

The eminently practical wren certainly manages her domestic affairs better; but then she is a unique example of the way in which two extremes of temperament may meet in one small person, being both artistic and utilitarian. The wren's nest is ornate and beautiful; but she does not worry about her tail, having in past ages reduced that appendage to strictly business-like proportions. Her young are not subject to drowning fatalities—at least, not according to my own experience. A casual examination of both nests will at once reveal the fact that Jenny Wren's nursery is more porous than that of the longtailed-tit, so that the moisture passes through it more quickly.

It is curious that both these birds should choose to build a long domed nest in open situations, instead of seeking refuge in ready-made holes as do the tits and several other species akin to them in general habits. Also, when comparing their skill as architects, one cannot help coming to the conclusion that the little brown wren consciously brings its more or less brown nest into complete harmony with its surroundings; whereas the black-and-white longtailed-tit, which has never been known to build other than the usual black-and-white nest peculiar to this species, seems on the contrary to choose a situation which will harmonise with her dwelling.

The longtailed-tit shows to best advantage when clinging to the side of its nursery. The soft blending of black and white in its plumage, together with the flush of pink on breast and flanks, make a beautiful colour-scheme which somehow melts into the silver-and-black lichen composing the exterior of its nest. The tail is then used as a support, being curved elegantly upwards, giving an idea of hitherto unsuspected strength latent in this long slender appendage.

The young are fed on insects and their larvæ. During their earlier stages the food supplied is so minute one cannot say definitely of what it consists, but by and by succulent caterpillars form the principal article of diet.

It is wonderful how the young tits manage to stow themselves away inside their long narrow nursery, and how every bird con-

trives to get fed. Judging from the dives each parent occasionally makes into the far corner of the nest, not a single one is overlooked, but receives in turn its allotted portion. Owing to the large demands made upon the adult birds' time and energy, they are not usually shy, but carry on their domestic duties in spite of intruders on their privacy, seldom indeed even pausing to remonstrate with the offender.

When fledged, the tails of the young birds are not much longer than those of fully-grown-up wrens. The gradual lengthening of this tail marks their progress from youth to maturity. As a rule only one brood is reared in the season. The young keep with their parents till the following spring, and during autumn and winter probably mix with other family parties. Being lively and sociable they apparently enjoy life to the full: yet in no locality is this species ever numerous. At night they are said to "gather together to roost in tall thorn hedges, where the bat-fowlers find them huddled into a ball-like cluster."¹ I once disturbed five or six which were roosting in a disused wren's nest.² Mr. Kearton describes how he and his brother found—"Three longtailed-tits' nests in the same hedgerow, within a couple of hundred yards of each other. We visited them on several occasions late in the evening and always found the male birds sharing the cosy feather-lined nests."³

GREAT-TIT, BLUE-TIT, COAL-TIT, MARSH-TIT

[E. L. TURNER]

In "The Garden that I Love" there stands a little group of trees, mostly larches, firs, chestnuts and beeches, with here and there an oak — not crowded together, but so arranged as to admit sunlight and air; an ideal feeding-place for the Tits, Nature's tiny acrobats. Here, any day in winter, may be found great-tits, coal-tits, blue,

¹ O. V. Aplin, *Birds of Oxfordshire*, p. 72.

² Vol. i. p. 200 of this work.

³ *Wild Life at Home*, p. 80.

marsh, and sometimes longtailed-tits, all actively engaged in pursuit of food or fun; making the "bare ruin'd quires" echo and re-echo with their sharp metallic call-notes.

It is perhaps during the winter months that these birds may be watched with comparative ease, and their confusing call-notes learned. Especially is this the case on those rare February days, sunny and windless, which are sometimes sandwiched between dead-cold January and blustering March; days when it seems as if we could place a finger on Nature's pulse, and feel the stirrings of new life.

Although many of the tits can be attracted to town-gardens by means of suet, cocoa-nuts, or other dainties, provided these are placed in a suitable spot inaccessible to the marauding cat, yet after all it is amidst their own natural surroundings wild things show to the best advantage. Therefore if the man desirous of acquiring bird-lore will only wrap himself up warmly, find the sunny side of a hedge and *wait*, he is sure to see much that will repay him; for a deeper insight into wild life is gained by patient watching, than can possibly result from a sharp cross-country walk. Every movement of the human animal is fraught with suspicion to the scores of bright eyes intent upon his progress. If he will but remain motionless, the owners of those bright eyes soon regain confidence and continue their various avocations. A rustling in the undergrowth may betray the presence of a tiny, long-tailed fieldmouse—by and by he will sit on the toe of the intruder's boot and wash himself. An impudent squirrel most probably will pelt the trespasser with fir-cone débris. As for birds, their self-consciousness soon vanishes. The great-tit is sure to be near shouting "*teacher, teacher, tea-cher, teach*"; the blue-tit, with a sharp "*zee-zee-zee*," will seize an acorn from beneath the watcher's feet, carry this to some chosen spot and proceed to hack pieces out of it with his strong bill. The coal-tit¹—easily distinguished from the marsh by the white patch at the back of his head—will be diligently

¹ The British and the Irish coal-tits have recently been separated sub-specifically. See the Classified Notes.

engaged hunting for insects or larvæ; either on the ground where he restlessly turns over dead leaves for a chance morsel, or else high up performing all sorts of gymnastic feats as he picks seeds from the larch-cones, in company with the more retiring marsh-tit. When searching for food on the trunks of trees the coal-tit hops upwards in a manner suggestive of the tree-creeper, and, like the latter bird, he spreads out his tail as a kind of prop whilst climbing, though his ascent is not so vertical, but rather takes the form of a spiral.

The marsh-tit is not, as his name suggests, confined to marshy districts, but seems equally fond of the outskirts of woods and gardens. All the Tits may frequently be seen searching for food upon the ground, especially in beech-woods if the season has been a good one for beech-mast. To the casual observer there may be no sign of life beneath the trees—nothing but a heap of russet leaves, but if he will turn his glasses upon this spot, the result will be surprising. Chaffinches, and perhaps a brambling or two, may be seen consorting with Tits in pursuit of food. As regards the latter birds nothing seems to come amiss to them. The very fact that they are so catholic in their diet accounts for their presence with us all the year through. Even the marsh-tit's slender bill is an instrument of no ordinary efficiency. I have seen one of these birds nip off a beech-pod that had not begun to split, and then, grasping it firmly with both feet, deal blows with his bill upon the hard husk worthy of his stronger cousin, the great-tit. There seemed no particular object in all this display of energy, because hundreds of good beech-nuts strewed the ground waiting to be eaten! When nuts fail, the Tits will later in the year tear to shreds the carpet of moss or lichen which is spread over banks and roots of trees; and in this eager search after insects, the moss and lichen is scattered in all directions.

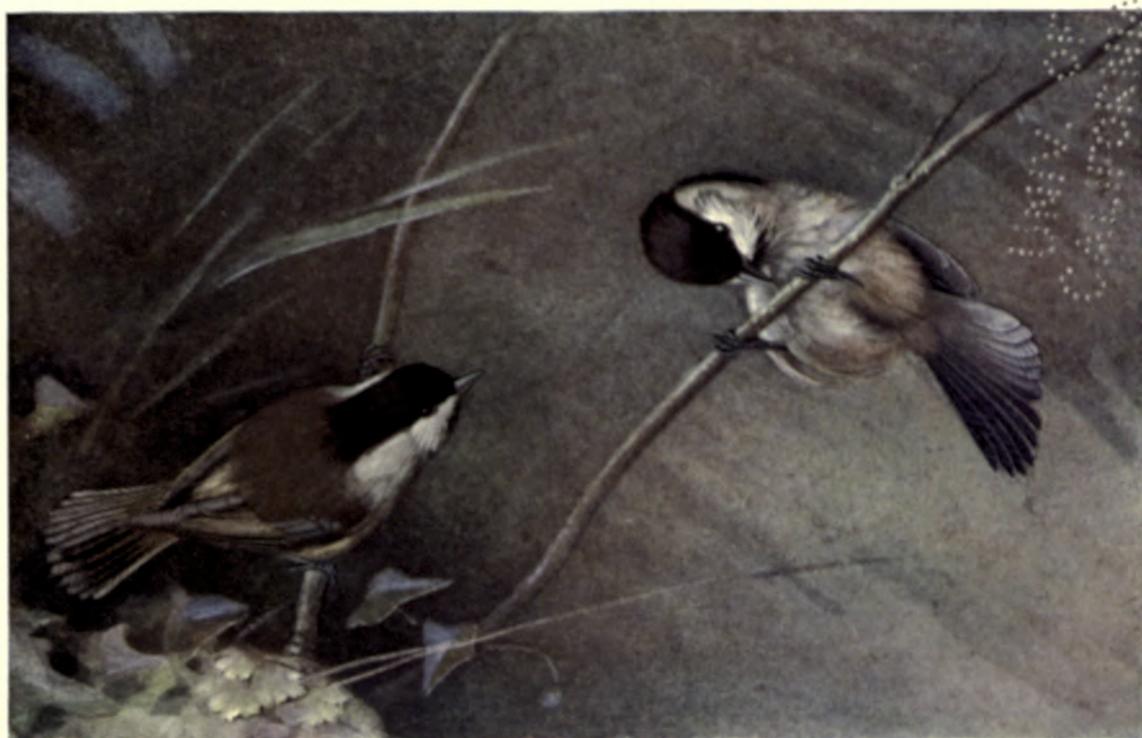
During the autumn of 1910, a solitary marsh-tit came to my garden every afternoon for the ripe red berries of the common honeysuckle. He would nip off one, fly to a plum-tree and there devour this dainty at leisure, then return for another; but rarely ate more

Plate 63

(Left) Two marsh-tits on a sunflower, one
disputing possession with a coal-tit

(Right) Willow-tits (see p. 206)

By A. W. Seaby



than five or six. As no other bird seemed to find out this favourite food-tree, the marsh-tit managed to eke out his "dessert" for nearly three weeks.

Great and blue-tits delight in acorns and commence to attack them in September. These they seldom devour *in situ*, but carry them in their claws to some quiet corner and proceed to chip out fairly large bits at a time. Later on, when acorns begin to germinate, they are more easily split along the cleavage line, and even hazel-nuts are opened by the great-tit in the same way when they begin to sprout.¹

The amount of food Tits can consume in a day is astounding. In my small garden I reckon to provide for about six pairs—at least as regular pensioners during the winter. Each of these birds feeds rapidly through all the hours of daylight: but, when we consider the high average of temperature birds have to maintain, this persistent stoking is not to be wondered at.

One autumn an early and unexpected spell of frost made me think it time to put out food for my pensioners, but I forgot to do so. About the fourth frosty morning, while the family was at prayers, three blue-tits hung on to the lead lights of the window and vigorously tapped at the glass, occasionally stopping to peer into the room; loudly protesting meanwhile against that travesty of religion which, being well-fed itself, forgets the less fortunate. There was no mistaking the birds' meaning, as they flew to and fro between my window and their food-table. I soon divided a cocoa-nut and suspended the halves, while the tits watched and scolded; but no sooner were these preparations for their meal complete, than they changed their note to one less querulous and began feeding with alacrity—surely a curious instance of memory and also of confidence in man. There may be some who will say the birds were "pauperised" and "degenerate." But I prefer to consider them—not as paupers, but rather "labourers worthy of their hire," and coming well under the Employers' Liability

¹ Kearton, *Wild Nature's Ways*, pp. 288-9.

Acts; for these once relentlessly persecuted Tits are now found to be useful as well as ornamental.

Much has been done of late years to prove the economic value of the Titmice.¹ Yarrell tells us how,—“In many parishes in England, a price used to be paid by the churchwardens for the heads of the blue-tit and its congeners under the general name of ‘Tomtits,’ on account of the loss they were believed to inflict on the gardeners, yet no one can be more mistaken than these men.” Stevenson in his *Birds of Norfolk*, when speaking of the hatred shown to the Tit Family by gardeners, remarks,—“Even the most obstinate of that opinionated race need but dissect the next victim of his folly, to know that he has killed a friend.”²

But those who are open-minded, and neither opinionated nor obstinate, should turn to Mr. R. Newstead’s little pamphlet on this subject.³ The conclusions set forth in this tract are based upon experiments carried out by the author, and extending over a period of twenty years. In every case the contents of the birds’ stomachs were examined, with the result that he places marsh, coal, and longtailed-tits unhesitatingly amongst those species “innocuous and more or less strictly beneficial.” Great and blue-tits come under the heading of “species which are generally considered pests of the farm and garden, *but with the balance of utility in their favour.*” In fact, but for the injury which they occasionally do to ripe pears, they might come under the heading of “species which are occasionally injurious, *but with a balance of utility in their favour.*” The italics are my own.

In the case of each longtailed, coal, and marsh-tit examined, the birds had fed upon insects of the injurious group, while the last two birds had in addition eaten seeds of the marsh-thistle. The diet of all these consisted of weevils, scale-insects, moth-larvæ, including larvæ of cabbage-moth, American blight, and gall-making insects; besides many dipterous insects and centipedes. This being the result

¹ Yarrell, *British Birds*, p. 484.

² *Birds of Norfolk*, vol. i. p. 143.

³ “Food of some British Birds.” Supplement to the *Journal of the Board of Agriculture*.

of Mr. Newstead's researches, surely even the "obstinate and opinionated" can no longer doubt the wickedness of slaughtering these innocents!

With regard to the great and blue-tits, it is necessary to quote from Mr. Newstead's pamphlet at some length in order that the reader may judge for himself whether, apart from all sentimental considerations, these two birds have, or have not, a right to live:—

"Out of thirty-three blue-tits examined, thirty-one contained insects of the injurious group, three beneficial groups, seven indifferent groups; three spiders, ten wheat, four maize, five pear, three apple rind, eleven bud scales, two vegetable matter undetermined, four fungus." Two of these "caught red-handed at the peas," had fed almost entirely on American blight, while amongst those shot while devouring pears, two were found to have destroyed also a large quantity of injurious insects. The stomach of one immature bird contained equal proportions of pear, fruit, and plant lice; another contained 500 wings and other remains of plant lice, also American blight. With regard to the injurious insect food devoured by blue-tits during the winter:—"The species which are eaten to a marked extent are (1) the mussel scale of the apple; (2) the white scale of the willow and ash; (3) the pit-making coccoid of the oak; (4) the young forms of the gooseberry scale, and other allied species of this genus; (5) the young forms of the cottony cushion-scale of the currant." "Out of fourteen great-tits examined, thirteen contained insects of the injurious group, six beneficial group, one indifferent, one mollusca, one spider, two apple rind and pips, two wheat, one maize, one bud scales."

"The nestlings (of great-tit) are fed very largely on moth larvæ. In June 1908 I watched a pair which had a brood of eight young in an iron pump, in a small rose nursery near Chester. Ninety per cent. of the food brought to the young consisted of the larvæ of Geometrid moths, which were collected chiefly from the damson,

apple, and oak-trees in the immediate neighbourhood of the nest. Those collected from the fruit-trees were chiefly larvæ of the winter moth (*C. brumata*), and those from the oak-tree mottled umber moth (*H. defoliaria*). Usually one caterpillar was brought to the young on each occasion, and often four visits were made in the course of five minutes. If we take the average number of visits at the rate of twenty-four per hour for sixteen hours, representing one working day, this gives us a total of 384 visits per day; and if twenty days are occupied in rearing the young, this gives us a grand total of 7680 visits to the nest during this period, so that the single pair of birds would be responsible for the destruction of between 7000 and 8000 insects, chiefly caterpillars" (p. 33).

Personally, I would estimate the number of insects destroyed by one pair of great or blue-tits at even a higher rate, because the young are with their parents, and fed on insect food after the average three weeks assigned to the nestling period. At this stage in their growth they require a large amount of food, and for some ten days longer, while a glimmer of light remains in the sky, the indefatigable parents may be seen feeding their half-grown brood as late as 9.45 or 10 P.M.

Both great-tits and blue-tits will hawk for insects on the wing, but perhaps the latter bird shows greater dexterity as an amateur fly-catcher, than does his more heavily built relative.

When we take into consideration the enormous amount of good the various species of Tits undoubtedly do, it is not to be wondered at that so far back as 1873 the International Economic Congress, held at Vienna, placed eight species of Titmice on the list of useful birds to be protected. This Congress was the direct outcome of a movement set on foot by the German farmers earlier still—in 1868—when they complained of "the excessive injury done by insects, owing to the sensible decrease and disappearance of birds."

Boards of Agriculture, whether British or foreign, do not as a rule publish sentimental pamphlets for women to weep over, but

there is one such paragraph in the Hungarian publication quoted above ; if it be true that—

“ A robin redbreast in a cage
Doth set all Heaven in a rage,”

then surely the following statistics would seem to call for fire and brimstone, or a second deluge !

“ According to Prof. Vallon, in October 1890, 423,800 dead birds were passed through the Customs at Brescia. Amongst these at first were found spotted fly-catchers, pied-flycatchers, whitethroats, garden-warblers, lesser whitethroats, rock-pipits, *great and blue titmice*—all birds of the greatest value. . . . Near Montegrado, within three days, 14,000 swallows fell victims, and on the stone field Crao three *millions of swallows* fell into the nets.”¹

With regard to the summer migrants destroyed in this wholesale manner, there can be no doubt that the injury inflicted upon agriculture must be immense ; but still it seems to me that our own resident birds, especially the Tits, nuthatch, tree-creeper, and goldcrest, must be even better worth preserving, from the mere fact that they are on the warpath all the year round.

The great-tit's partiality for bees, however, makes him an object of suspicion to the apiculturalist. This species has been known actually to break its way into a hive and feed upon the inmates. Mr. F. Boyes narrates a rather peculiar instance of a great-tit being killed by the bees whose hive it had visited once too often on bee-murder intent ; a trap being set, it was caught by the leg, and the infuriated inhabitants of the hive revenged themselves by stinging it to death before Mr. Boyes could effect its release.²

The Tits pair early, if indeed they do not pair for life. As soon as February comes in, the struggle for “first pick” of whatever dainties you may dispense to your pensioners ceases between individual birds of the same species, and two of a kind will be seen feeding

¹ *International Convention*, historical sketch, by Otto Herman, p. 21.

² Nelson and Clark, *Birds of Yorkshire*, p. 100.

amicably, one at each end of a cocoa-nut. If such be the case it may safely be inferred that courting has begun, or at any rate that they are "keeping company," as the country-folk say. About this season of the year, too, the brilliant colours of these birds begin to assert themselves. Hitherto their splendid suits of green, black and yellow, blue or russet, have looked dull and uniformly greyish, because partially concealed by long fringes which edge the new feathers donned after the autumn moult. These form a sort of overall during the winter, but gradually wear away as spring approaches, and thus reveal the glories of their wedding-garments at the right time.

I have seen the coal-tit "showing off" to the female as early as January 16, but as a rule this performance does not take place till considerably later. Amongst all the Tits it consists in a ridiculous strutting to and fro along a branch, with wings drooped and tail stiffly erect, the feathers of crown, cheeks, and throat, puffed out, according to the capacity of each species. The handsome and swaggering great-tit makes a fine display of his glossy black waistcoat and yellow vest, and swells considerably, puffed out with pride and vainglory. The blue-tit makes much of his blue cap, and the marsh of his black crown; the crested-tit does the same with his dainty plume. Each species has "points" peculiar to itself and makes the most of them. The blue-tit has in addition a nuptial flight noted by Mr. H. E. Howard as being similar to that of the chiff-chaff, which he describes as follows:—"Another time he will float towards her through the air like a very big moth, with his wings outstretched and slowly flapping. This is one of the prettiest aspects of the courtship, especially when, instead of floating straight towards her, he approaches in semicircles: the great beauty of it lies in the way in which he beats the air with his wings; this he does so very slowly as to give one the impression that he ought not to be moving at all."¹ Perhaps the other species have similar displays.

¹ *British Warblers*, Part 2, p. 14.

When thus courted, the hen bird as a rule goes quietly on with her occupation, tapping the bark with her bill in search of larvæ, or splitting an acorn with the utmost unconcern; scarcely glancing aside even if a second suitor appears, and a more or less deadly contest ensues. Probably, however, preliminaries have already been settled between the pair, even to the choosing of a fresh home, or the spring-cleaning of the old one. The absolute certainty with which you may calculate on a pair of tits returning to the same nesting-site year after year inclines me to believe they pair for life, as perhaps do many other species. The great, blue, marsh, and coal-tits all nest in holes; as is the case with so many birds where the sexes are alike in colour. Great and blue-tits are as ubiquitous in their choice of a nesting-site as is the robin. They will utilise a hole in any convenient place—whether tree, pump, axle-wheel, wall, letter-box, or one of those “desirable residences” now so universally provided for them, in the shape of nesting-boxes.

Coal-tits prefer holes in banks and walls, or in old tree-stumps rather low down; marsh-tits have a partiality for old pollard-willows by the water's side; but apple-trees are also frequently chosen. Both these species occasionally take kindly to nesting-boxes.

The great-tit often uses an immense amount of material in the construction of its nest. Some years ago I found one in the drawer of a derelict milk-separator. The actual cup-shaped nest itself occupied one corner only; but the entire drawer, measuring eighteen inches by ten, and about three deep, was filled with a carefully felted mass of wool, moss, leaves, horse-hair and feathers. I have found this to be more or less the case with nests of this species found in stone walls. All the available space will be occupied with material tidily disposed around, and continuous with the cup of the nest itself, which is usually lined with horse-hair.

The blue-tit makes a slighter nest, in which feathers are more largely used than is the case with the great-tit. The coal-tit, in addition to the usual moss, wool, and hair, is very fond of a lining of

rabbit's fur. The nest of the marsh-tit is composed of a mass of moss, with a lining of felted wool, hair, and rabbit's fur. Each of these species occasionally will be found to cover up its eggs, until the whole clutch is laid and incubation commences.

The number of eggs laid by either of the Tits varies from six to ten, but the blue-tit will lay from twelve to sixteen, and even more.¹ Some years ago a boy of my acquaintance having found a great-tit's nest containing one egg, daily removed the second egg, until the hapless and miserably deceived bird had laid twenty-five.

All these birds are close-sitters, but especially is this the case with blue-tits. When photographing the daily growth of young blue-tits I inserted two fingers into the box and removed my chosen victim from beneath its mother for five days in succession, she making no attempt to fly from the open box, but contenting herself with pecking my hand as hard as she could by way of protest. When looked at, a brooding blue-tit will so flatten herself into the nest that it is difficult to distinguish her from the soft feather lining. Often, however, she will hiss at you. I have been told by village boys to beware of putting my hand into a hole "because there was a snake inside," and may the recording angel pass over the way in which I have fostered this belief—for the sake of the valiant blue-tits whose courage is so largely disproportionate to their size.

Yarrell records an extraordinary instance of persistent attachment to a given nesting-site on the part of blue-tits—"In 1779, according to one account, in 1785, according to another, it is said that a pair of these birds built their nest in a large earthenware bottle, which had been left to drain in the branches of a tree in a garden at Oxbridge Farm, near Stockton-on-Tees, and safely hatched their young. The bottle having been allowed to remain in the same position by the occupiers of the farm, then and still a family of the name of Callender, was frequented for the purpose and with a like result until 1822, when,

¹ Nests of the blue-tit containing eggs or young have been reported in October, and even as late as December. See vol. i. p. 50.

Plate 64

Blue-tit about to feed its nestlings

By A. W. Seaby



the tree becoming decayed, the bottle was placed in one near by, and the tenancy continued till 1851. In that year the occupiers of the farm omitted drawing out the old nest, as had been their constant practice before the breeding season, and in consequence the birds chose another place. But in 1852 they returned to the bottle and have since annually built in it, or in a second bottle which has lately been placed close by it, up to the present year 1873, with the exception of one season, when a pair of great-tits took possession of their inheritance. The intruders were shot in the hope that the tenancy will not be again disturbed."¹

Having found out that the last of the Callenders was dead, and that the present occupier of the farm at Oxbridge was named Bell, I wrote to inquire about the fate of this historic bottle, and received an answer from Mrs. Bell on November 16, 1910, as follows:—"The bottle is still in the tree, and blue-tits build there every year."

One summer a pair of great-tits, which reared a family in a nesting-box beneath my dining-room window, regularly invaded the kitchen for scraps of food. The male bird would perch on a knife-machine in the passage, dart into the kitchen when the cook's back was turned, seize bits of suet or fat and carry them into the nesting-box—surely a cheap way of rearing a family!

Mr. Farren tells me that in the summer of 1908, every day for the greater part of a week, a great-tit brought two, and sometimes three, youngsters into his backyard, where he fed the birds throughout the winter. "The little ones sat on the wall while the parent dug out pieces from a very stale cocoa-nut which was suspended from a post, and carried these morsels to the young. They evidently liked this food for they squealed impatiently while the chopping-out process was going on. I forget exactly how soon, but not more than a week after the first visit, I saw the young ones helping themselves to the cocoa-nut, or, at any rate, trying to do so."

The young of all these species remain longer in the nest than do

¹ Yarrell, 4th ed., vol. i. p. 486.

birds reared in the open. I removed my young blue-tits for a little while daily for sixteen days when photographing their growth, but they did not attempt to leave the box till a week later.

In May 1909 a pair of great-tits built inside the wooden casing of a pump. Unfortunately a late frost froze the pump, and the owner not being aware of the existence of this nest, poured in a kettleful of boiling water and thus killed the half-fledged brood. In spite of such a tragedy, the tits built again in the same place. Being desirous of photographing the second brood I removed a board from the pump casing; but immediately the whole family flew into my face and then fluttered away. Eventually several were caught and put back into the nest. When almost fledged, young Tits, though able to perch on a large bough, cannot maintain their balance on a small twig, but either fall off at once, or hang limply for some seconds, unable to hoist themselves up. My captured nestlings had arrived at this point in their education, but two days later they were quite agile, and in training for the future acrobats Nature intended them to be. At this stage of their growth they are taken to the woods, and there tended by their parents for a considerable time. This is the crucial point in the career of all young birds, for their semi-helpless condition, ignorance of the world, and clamorous outcries, render them particularly liable to attacks from marauding foes.

Marsh and coal-tits are less disposed to tolerate human intrusion into their domestic affairs, and it is not well to subject these two species to overmuch watching. But here again individuals differ, and some will be found more confiding than others.

For three weeks during June 1910 I tenanted a houseboat close to the edge of a thick wood encircling a secluded Broad in Norfolk. A green ride meandered through this wood to the water's edge. In the twilight of dawn or dusk none disputed my wanderings up and down this ride but the lordly pheasant and his kind. Even in the day it was little frequented. The bushes and trees were alive with half-fledged birds, and the scene of almost hourly tragedies. There one

saw Nature as she really is—beautiful and bountiful, dark and inscrutable; indifferent to all pain; bent only on rigidly maintaining the balance of things. Guided by a faint “*cheep*” I would constantly find a tiny isolated tit, completely forgotten by the parents, which were too busy feeding the brood collectively to spare a moment for the individual waif. And, indeed, they could not be blamed for neglect.

In a group of tall oaks there was a numerous family of fully fledged coal-tits, sitting amongst the branches so high up I could only identify them with my field-glasses. It would be difficult to imagine how any living thing could work more strenuously than did the parents of this clamorous brood. They were ragged and unkempt almost beyond recognition. Every moment was spent in seizing a caterpillar and darting to each youngster in turn; yet work as they would, the incessant piping call-notes of the young coal-tits resounded through the wood as long as there was a glimmer of light. Therefore woe betide any hapless little one that missed its balance and fluttered to the ground. What chance had it of being heard? What time had the parents to notice its absence? Either the cries became gradually feebler till the bird died from exhaustion, or it was pounced upon by one or other of the many foes which destroy bird life, and mercifully put out of its pain.

The roosting habits of our small birds are more or less enveloped in mystery; but I have found Tits tucked up for the night in haystacks, especially during the winter months; sometimes, too, they roost in old nesting-boxes, and therefore, probably, holes in trees are made use of in like manner.

Whilst on Hickling Broad in November, instead of the summer migrants I had been used to seeing amongst the reed-beds, their places were taken by wrens and Tits, which seemed to find food in plenty there, and shelter from the bitter marsh-land winds. No matter whether we ploughed through frozen “*deeks*,” or tramped over the marshes, our ears were constantly assailed by the angry “*churr*” of Jenny Wren, or the indignant “*zee zee*” of blue-tits, whilst coal and

marsh-tits seemed rather to prefer the small plantations bordering the Broad. Both Tits and nuthatches are said to cling to the bark of trees and roost head downwards. Mr. Boraston noticed that some of his early-morning tit visitors in the winter "had their tails askew, as if their sleeping apartments had not been over-spacious." He also says:—"One blue-tit, which I kept overnight in a sudden frost, stowed itself closely in a corner of the cage until it bethought itself of a small gallipot in another corner, when it entered it and nestled down as if it had been a nest, sleeping embedded in a liberal lining of ants' eggs which had remained over from supper."¹

The ordinary call-notes of the Tits are varied and confusing, and cannot be adequately described in words. The would-be student *must* go into the woods and worry them out for himself. Not one of the members of this group can be said to attain the dignity of song, though the great-tit is capable of producing a variety of sounds, and frequently mimics other birds. During the breeding season he gives vent to a prolonged call, when desirous of expressing that emotion which sometimes turns the dullest and most prosaic of beings into a singer or poet. But even at his best, the great-tit's so-called "song" is more remarkable for cheerfulness than for quality. Yet one day I was puzzled by a musical call-note often repeated and ending in a curious clanging trill, like the ringing of a blacksmith's anvil. Eventually I found these sounds were produced by a great-tit, whose usual notes resemble the sharpening of a saw.

The song of the coal-tit is a weaker edition of the great-tit's. It consists of the same double notes I have elsewhere likened to "*teacher, teacher, tee-cher, teach*"; but the coal-tit drops the final "*teach,*" and his notes are altogether thinner and sharper than those of his relative. Inasmuch as these notes are chiefly confined to the breeding season, they are by courtesy called a "song." Its ordinary call-note is sharp and shrill. When hunting with a party of goldcrests coal-tits are decidedly noisy: the approach of a little company of these birds foraging

¹ *Birds by Land and Sea*, p. 56.

in the pine-woods announces itself by as clear a piping as that preceding a Highland regiment. Nevertheless it requires much time and patience to distinguish between the various species of Tits and their allies when they are all banded together; but, once learnt, their apparently undifferentiated sounds are very distinct. Curiously enough, it does not require a musical ear to be an expert in bird-calls; for my *ultima thule* when perplexed about these things is a man who has not the slightest appreciation either of a barrel-organ ditty, or of the divinest music that ever swayed the soul of humanity.

As for the notes of the blue-tit, it requires a very charitable person indeed to construe the churring, scolding call of this cheerful but often irascible bird into anything approaching a song. Nevertheless the long-drawn-out trill, which is uttered by the blue-tit during the breeding season, is to all intents and purposes a song, and must be regarded as such by musical critics since the bird does its level best. But if you intrude upon his domestic affairs, scurrilous language is flung at you with an energy and determination which make you at once wish to apologise and withdraw. The fact that his bill may be filled with insects in nowise interferes with his even flow of language, as with body delicately poised and crest erect he gives you a bit of his mind. However, be patient and retain your ground; in time "this atom in full breath" will calm down and even take you into his confidence. The marsh-tit's notes are best described by Mr. C. J. Alexander as "(1) A double note; the most usual; often followed by a harsh note repeated several times. (2) Thin, sharp notes. (3) Song: (a) A loud, clear note, repeated about seven times; the usual song; (b) based on a more liquid pronunciation of (1) but sometimes including low notes of a different character. The marsh-tit's song (a) is only heard from December to April, but regularly during most of that period; song (b) is uttered occasionally during many of the summer months."¹

During the summer the simple songs of the Tits are forgotten.

¹ *British Birds*, vol. iv. p. 147.

But we are only too glad to hear their voices on those dull winter days :—

“ When yellow leaves, or none, or few, do hang
 Upon those boughs which shake against the cold,
 Bare ruin'd quires, where late the sweet birds sang.”

The deserted aisles in Nature's vast pine-wood cathedrals are not so bare, nor yet so desolate, as they would be if there were no courageous, light-hearted Tits, with their associates, to enliven them with merry call-notes and graceful aerial performances.

BRITISH WILLOW-TIT

[E. L. TURNER]

Recent ornithologists have added another species to the four already described—namely, the British willow-tit. Hitherto this bird has been confounded with the marsh-tit, from which in general appearance it differs but slightly. Since its discovery as a British bird, by Pastor Kleinschmidt and Dr. Ernst Hartert in 1897, very little information has been forthcoming concerning the habits of the willow-tit.¹ For what I have been able to gather I am mainly indebted to Messrs. C. J. and H. G. Alexander. The latter tells me that—“ Willow-tits consort rather less than marsh-tits with large parties of other species of Tits ; but may often be seen with marsh-tits only, or in smaller parties by themselves. Their habitat is slightly different, for they prefer less scrubby places, showing rather more aristocratic tastes in the choice of suitable haunts than do marsh-tits ; also they have a wider range. The proportion in which willow-tits may be found in the neighbourhood of Tunbridge Wells, compared with marsh-tits, is quite one in four. There is a distinct *tone* about the willow-tit's notes which, when once really learned, ought

¹ *British Birds*, July 1907, p. 47.

Plate 65

(Left) Great-tit

(Right) Crested-tits

By A. W. Seaby



not to be confused with the marsh-tit's, any more than marsh with great."

Mr. C. J. Alexander analyses the notes as follows:¹ "(1) Deep, plaintive note, sometimes prefixed by one or two thin notes. (2) Thin, sharp notes; more frequently uttered than the corresponding notes of the marsh-tit. (3) Song: rich nightingale-like notes, mingled with a soft musical warbling. The song-period extends from January to April, and again from July to September—this corresponds in general with the song-periods of the coal and blue-tits—but the actual song of the willow-tit is heard but rarely." Some differences between the breeding habits of this species and those of the marsh-tit have been described in the Classified Notes.

CRESTED-TIT

[E. L. TURNER]

Crested-tits are resident and more local in their habitat than any other British species, except bearded-tits. In Great Britain their breeding area is confined to one locality in Scotland, to Strathspey, a tract of country about thirty miles in length and from three to ten miles in breadth. They are seldom found away from pine-woods, but during the winter travel about in small flocks, occasionally consorting with other titmice and goldcrests; still, however, keeping well within their breeding area.

In general habits crested-tits resemble other Paridæ, but are a trifle more staid in their demeanour. In spite of the well-developed crest, it requires a sharp eye to distinguish between this species and its near relative, the blue-tit: because ordinarily this distinctive badge is not nearly so conspicuous as one would imagine, unless its owner becomes excited; then indeed the crest is raised considerably above its normal position, and appears particularly prominent. But on dull

¹ *British Birds*, Oct. 1910, pp. 146-7.

days, when colour counts for little, and the bird is quietly going about its ordinary business, the delicate wind-blown crest melts into the sombreness of tossing pine-branches. The very fragility of this ornamental crest gives it additional charm. It consists merely of a few rows of dull black feathers, edged with greyish white, graduated until the central one stands out considerably beyond the rest. The blue-tit when agitated erects his crown feathers, and presents the vexed and ruffled appearance of an angry terrier. The crested-tit's display of emotion is more dignified, because in his case the long delicate plume resembles that surmounting a knight's helmet; while the black gorget and collar together with a secondary dusky band, which half-encircles his neck, are like some order of merit, and at close range further distinguish this bird from his more bourgeois brethren.

Gould describes the call-note of this species as "a sharp and piercing cry." Mr. H. G. Alexander likens it to the nuthatch's most common succession of notes; he says, too, that he has never heard other than this one trill, which is louder and of a pitch that travels further than most tits'.

Crested-tits feed principally upon insects and their larvæ, which they diligently pursue after the manner of titmice generally, by clinging to the underside of a branch, hanging head-downwards, and restlessly flitting from place to place. The food must often be of a minute character. Saxby describes a little flock which he watched feeding for upwards of half an hour on one particular tree:—"Directing their attention almost exclusively to the extremities of smaller branches"; and, although he broke off several of these, he was unable to ascertain the exact nature of their food.¹

Mr. Alexander tells me he once saw two crested-tits fighting in the pine-forests near Arcachon. His description of this combat is as follows:—"Two which we saw seemed to be fighting rather vigorously, for they fluttered right down to the ground together in a confused feathery ball, and there remained motionless several seconds, one

¹ *Zoologist*, 1862, p. 7998.

standing up more or less on top of the other. Presently this one flew to a tree, and the other followed it, apparently none the worse; the first then trilled very vigorously. A third bird was near by, apparently watching, and as it did not trill at all, I think it is fairly reasonable to suppose that it was the female. These birds were amongst the small trees; there were no other tits with them."

The nests are usually placed in holes in decayed pine-trees, from three to twelve feet above ground. Occasionally they have been found in iron or wooden posts;¹ but the crested-tit is akin to the coal-tit in its marked preference for old stumps. They have been known to make use of deserted crow, magpie, or squirrel nests; while in Prussia now and again elaborate structures, similar to those built by the common wren, have been found in juniper bushes.

The nest itself is composed of green moss, lined with wool, hair, or feathers. One described by Mr. Harvie-Brown had a superstructure of red-deer hair, with a lining of blue hare's fur. Another contained grouse feathers in the lining, and tufts of cotton grass in the main structure.² In the matter of this fur lining the crested-tit's nursery seems most to resemble those of coal and marsh-tits. As regards the nest occasionally found in juniper bushes, perhaps the crested-tit is on the way towards attaining that degree of perfection in the art of building already reached by the wren and longtailed-tit. Did all the members of this family originally build in holes; or are the coal, marsh, great, and blue-tits lazy and degenerate, preferring the comparatively easy task of filling up a ready-made hole, to the maximum of labour entailed in making such an elaborate nest as that of the longtailed-tit?

Although so locally distributed in Great Britain, the habitat of the crested-tit is extensive throughout Europe. In Germany, Naumann says,—“It is partly a resident, and to some extent a wanderer, but does not leave us, and is not so much a vagrant as many other birds. Their ramblings are most extended in the late autumn and spring; the

¹ *Fauna of the Moray Basin.*

² Dresser and Sharpe, *Birds of Europe*, vol. iii.

crested-tit is then found in small groves of pine or fir-trees standing in the open country, and miles away from forests; it is also found in large gardens. They hurry uneasily through the deciduous woods and fruit gardens, which lie between the pine-woods they visit in their wanderings, and are only at ease when in the latter. They also hasten with greater speed over fields or any treeless tracts they have to pass. Often a little flock settles in a small isolated pine-wood, remaining there throughout the winter and wandering through it day after day till the spring, when they return to the larger woods to breed. During these migrations it is said to be the leader of the flocks of tits with which it consorts, also that they obey its call-note, and that it keeps watch and gives the first alarm if any enemy approaches.”¹

Here we find a slight difference between the behaviour of the continental crested-tit and our own native bird; for in Strathspey during autumn and winter “a few pairs may usually be found, consorting with other members of the genus, but they seldom seem to wander beyond the confines of their native strath.”² Crested-tits have been met with as occasional wanderers in England, and their various occurrences thoroughly gone into and sifted by Mr. J. H. Gurney, who sums up his somewhat exhaustive paper as follows:—“It will be seen that we have here a list of about twenty-two crested-tits seen or killed, of which three rest on bird-stuffers’ authority, and fifteen on the evidence of amateurs. Twelve of these were on the East Coast, the county of Yorkshire being especially favoured with no less than seven. These may, most likely, have been of Norwegian origin; it is fair to assume this, and that they had crossed the sea with some of the great bands of goldcrests, or more likely with smaller parties of the great-tit, which, as is well known, visits England in that way. . . . Or they may have come from Holland, for Mr. Seebohm tells us that the crested-tit is very abundant in Valkenswaard, which is not two hundred miles from Suffolk.”³

¹ Dresser and Sharpe, *Birds of Europe*, vol. iii.

² *Fauna of Moray*, p. 256.

³ *Zoologist*, 1890, pp. 210-213.

Some solution of the isolation and restricted dispersal of the crested-tit in Britain has been attempted by Messrs. Harvie-Brown and T. E. Buckley, on the assumption that the old Caledonian forests, where this bird has always been a resident, were at one time "part of a continuous tract which may have been inhabited by this species before the separation from the Continent took place."¹

Perhaps the limited breeding-range of the bearded-tit in England may also be accounted for on the same grounds, as these latter birds are common enough in Holland, which is the nearest point to the east coast of Norfolk.

It is probable, however, that crested-tits visit our English pine-woods more frequently than is generally supposed, though these will be stragglers from the Continent. When we consider how very slightly this bird differs in appearance and habits from other members of the Tit Family, a great many of these wanderers must pass unnoticed. Now that the number of "amateurs"—whoever may be included in that somewhat ambiguous term—is so largely on the increase, it would be well if each one kept an eye open for chance stragglers. If, however, the "amateur" carries a gun, let him refrain from using it, so that others may enjoy the rare privilege of seeing one of these little knights-errant.

It is some comfort to be told that—"We have little fear of the crested-tit becoming rare through man's direct agency, as the area they cover (in Scotland) is an extensive one, and to find the nests requires considerable search." Also that—"At present the crested-tit is believed to be again on the increase locally, and this may partly be accounted for by the careful system of forestry, and the planting of Scots fir which has been carried on for over one hundred years."²

But since these lines were penned, the modern egg-snatcher has been endowed with a motor-car and much gold. Where the one cannot penetrate, the other does; so that extra vigilance is needed nowadays in order to protect this most interesting bird. For what

¹ *Fauna of Moray*, p. 259.

² *Ibid.* pp. 258-9.

are thirty miles to a motorist, and what protection was Danæ's tower against Zeus' shower of gold?

This modern menace to bird life is a very real one, as any man who has been in the habit of living with these rarer birds in their breeding-haunts knows only too well. A given area will be stripped of its best treasures in a single week-end, and the loss attributed to "stoats" or "hawks"; and thus many a landowner, who has the real interests of his birds at heart, is gulled in this manner by over-tempted and consequently corrupted keepers.

THE NUTHATCH

[ORDER: *Passeriformes*. FAMILY: *Sittidæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON. E. L. TURNER]

NUTHATCH [*Sitta europæa* Linnæus. *Sitta cæsia* Wolf. Nuthack, nut-jobber, mudstopper, woodcracker, jar-bird. French, *torchepot*; German, *Kleiber*, *Spechtmeise*; Italian, *picchio muratore*].

1. **Description.**—The nuthatch cannot be confused with any other British bird, and may easily be recognised by the blue-grey upper parts, the buff under surface, and short tail. The sexes are alike. (Pl. 66.) Length 5·7 inches (145 mm.). The upper parts are of a uniform blue-grey, somewhat darker on the wings. The sides of the face are white, contrasting with the black lores and a black line running from behind the eye backwards on to the neck. The throat is white, the rest of the under parts rich rufous buff, save along the upper margin of the flanks, which is of a rich chestnut-red, and the under tail-coverts which are white, each feather being margined with chestnut-red. The two central tail feathers are blue-grey, the rest black, those of the middle of the series tipped grey; but in succeeding feathers a large white spot appears on the tip of the inner web, a grey spot on the outer. As the feathers are traced outwards the white spot spreads across to the outer web, and, on the outermost, down the outer web for some distance, while the terminal portion of these feathers is grey. The juvenile plumage differs from the adult in lacking the rich dark chestnut-red on the flanks, and on the under tail-coverts which are only faintly marked with pale brown in place of red. The black before and behind the eye is tinged with brown, and the under parts are much paler. [W. P. P.]

2. **Distribution.**—This species is distributed throughout Europe and temperate Asia east to Japan, but is divided into many geographical races. Our British local form, *Sitta europæa britannica*, Hartert, is the only one which has occurred in the British Isles, and is resident in the central and southern counties of England and Wales, only a rare straggler to Scotland, and

absent from Ireland. In Great Britain it is very rare on the western seaboard, Cornwall, Pembroke, Cardigan Bay, Anglesey, and Carnarvon, and though it is said to have formerly nested in Northumberland, Durham, and Lancashire, it is now rarely met with north of lat. 55°. A few breed in West Yorkshire, but it is decidedly scarce in Lincoln, the north of Notts and Derbyshire and Cheshire (except in the south-west). It is everywhere rather local and confined to parks, woodlands and the neighbourhood of old timber. [F. C. R. J.]

3. Migration.—Resident and non-migratory, although there is enough local wandering in winter to make the distribution noticeably more even than in the nesting season (cf. Ticehurst, *B. of Kent*, 1909, p. 85). But the species is almost unknown actually *outside* its breeding area. There are a few exceptional records for Scotland, but none for Ireland (cf. Saunders, *Ill. Man. Brit. Birds*, 2nd ed., 1899, p. 113). [A. L. T.]

4. Nest and Eggs.—Nesting site: in a natural hole or crevice of a tree as a rule, but occasionally in nesting-boxes, holes in walls, sandbanks, old magpies' nests, or even in the side of a haystack! When the entrance of the hole is too large it is plastered up with mud by the birds, and by far the greater number of nests show some traces of mud round the edge of the hole. Old woodpeckers' borings are also sometimes occupied. The hole is filled up with scales of the bark of the Scotch fir or birch, and in some cases dead leaves or even dry grass have been recorded as used for nest lining. (Pl. XXVI.) Both sexes have been seen to share in building the nest. (E. L. T.) Eggs 5 to 8 as a rule, occasionally up to 11 in number, white in ground colour, boldly spotted and blotched with dark and lighter red-brown and showing a few violet-grey shellmarks. Some eggs are devoid of markings, while others have only fine light red specks. (Pl. D.) Average size of 100 eggs, $\cdot 75 \times \cdot 56$ in. [$19\cdot 2 \times 14\cdot 3$ mm.]. The eggs may be found towards the end of April, or more frequently during the first two weeks of May. Incubation lasts apparently about 13-14 days, and is probably performed by the hen alone (Naumann), though Bechstein states that both sexes share in the work. A second brood is sometimes reared, though the normal number is one only. [F. C. R. J.]

5. Food.—Chiefly minute insects and their larvæ. During autumn and winter it feeds largely on nuts and acorns. The young are fed by both parents chiefly on small caterpillars and flies. [E. L. T.]

6. Song Period.—Frequently from the end of January to the beginning of May: rarely in August and September. Also records during mild spells in the other winter months (C. J. and H. G. Alexander, *British Birds*, iv. p. 275).



Photo by H. L. Turner

Nuthatch at its nest hole in a tree



Photo by W. Farren

Nuthatch's Nest in a box. Both the entrance hole and a hole on the top of the box show mud plaster put in position by the bird

THE NUTHATCH

[E. L. TURNER]

The nuthatch resembles the tree-creeper in being a great frequenter of tree-trunks and a mighty hunter of insects: but here the resemblance ceases. The nuthatch is easily distinguished from the tree-creeper by his larger size, gayer colours, rather stumpy body, and loud but mellow call-note: "*Be quick, be quick, be quick.*" He has no tail worth boasting about, and what he does possess is not used in climbing. Again, unlike the tree-creeper, the nuthatch depends entirely upon his powerful feet and claws when climbing in search of food. He moves either up or down a tree by a series of short, jerky runs, and in a much more direct manner than the furtive tree-creeper; in fact, he cannot be equalled in his headlong rapid descent by any bird.

Perhaps no species differ so widely in their manner of following identical pursuits as do these two; for while the tree-creeper, when hunting, employs the silent, insinuating methods already described (vol. i.), the nuthatch disdains secrecy and makes his presence known to his prey by a series of short, sharp taps on the bark with his sledgehammer bill, peremptorily demanding immediate and unconditional surrender, and, in fact, giving the victim no choice. The nuthatch is typical of Death Triumphant forcing admittance into the Home of Life. For the feelings of his quarry he cares not, but hunts as if he thoroughly enjoyed the sport; cheerfulness and courage being his chief characteristics.

Perhaps the nuthatch's attire of gay chestnut and blue-grey—so difficult for the photographer to render correctly—may account for this happy disposition; for who knows what influence bright clothes have upon character! Drab garments often betoken drab lives.

Gay as the nuthatch looks in spring dress, yet he harmonises well with his surroundings ; for under certain conditions bright colours may conceal a bird where more sober tones would render it conspicuous. The nuthatch lives more amongst the branches of trees than does the delicately pencilled tree-creeper. In summer when the sunlight filtering through masses of foliage makes broad splashes of colour, the nuthatch is easily concealed and "melts into" his surroundings. Yet during the winter his bluish back appears greyish brown in a dull light, rendering him inconspicuous against the russet and grey lichen-covered branches.

The nuthatch feeds largely on insects, such as weevils and other small beetles, all of the injurious species ; and these birds must do an immense amount of good in cleaning and scouring trees from such pests at all seasons of the year. But they do not confine themselves wholly to insect food : for during autumn and winter beech-mast, hazel-nuts and acorns are consumed in large quantities. The silence of the winter woods is often broken by a sound of level blows upon some resisting surface. Probably this is our friend at work in his own peculiar manner. Having found a nut, he will carry it in his claws to some favourite cranny, and there, by means of bill and claws, wedge it tightly into this crevice and proceed to split the shell with well-directed blows from his strong beak ; generally, but not always, perching himself *above* the nut as shown in Mr. Seaby's picture. These sledge-hammer blows are delivered with the force of his whole body, and not merely by means of the muscles of head and neck after the manner of titmice. Hence his name of "Nuthatch," or "Nuthack," from the French *hâche*, a hatchet. This method of attack is continued until the contents of the nut are arrived at and devoured.

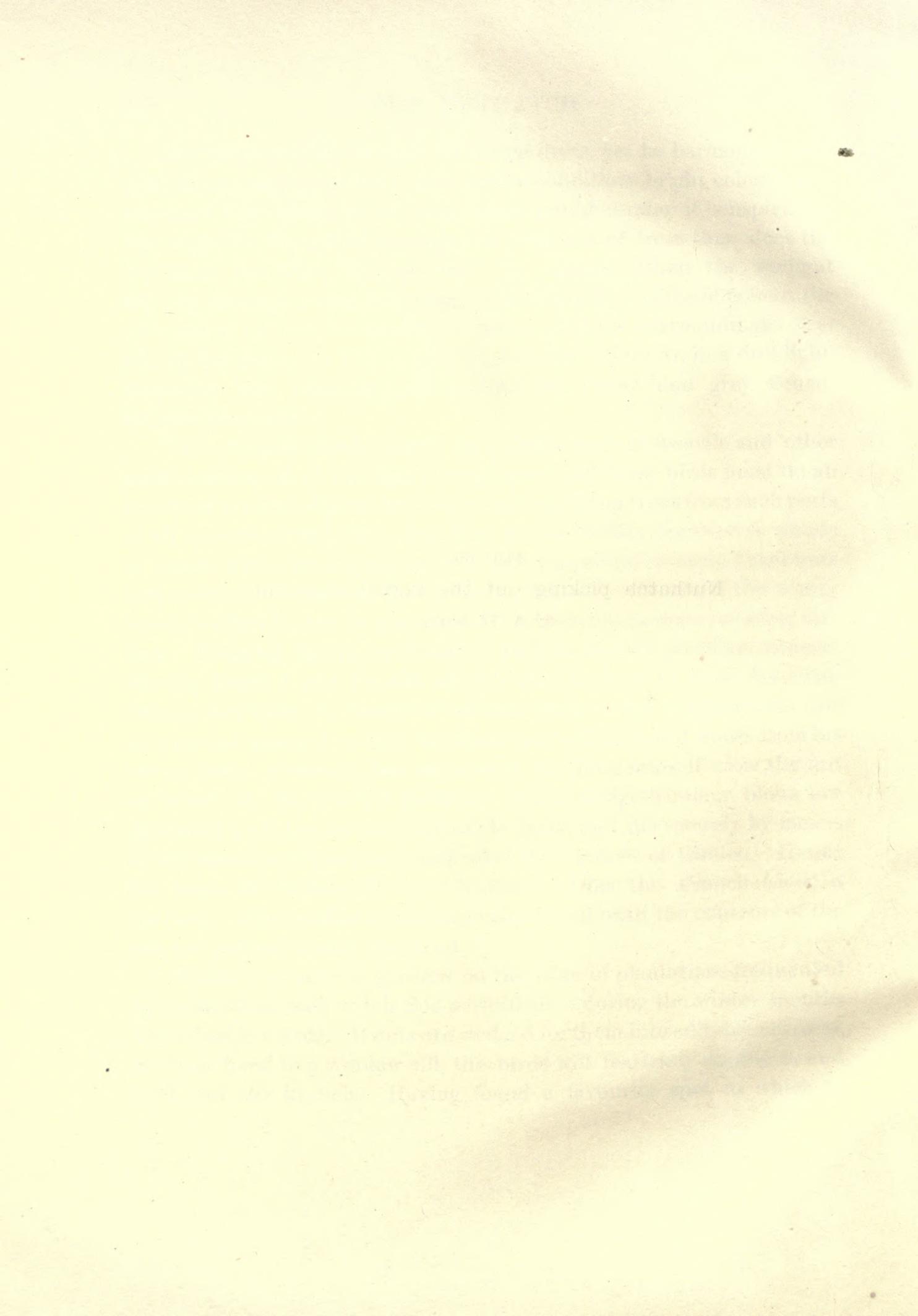
Those, who possess gardens on the edge of plantations frequented by nuthatches, may watch this performance during the winter months when food is scarce. If nuts are wedged for them into suitable crevices, or even fixed to a window-sill, the birds will fearlessly approach, and hack out the kernels. Having found a favourite spot in which to

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Plate 66

Nuthatch picking out the kernel of a nut

By A. W. Seaby





A. W. SEABY

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crack nuts they will return to it again and again, just as a song-thrush will immolate scores of snails on the same altar-stone. Large quantities of broken nut-shells found near these places may have given rise to the idea that nuthatches store food like squirrels. Personally I do not think that such a happy-go-lucky bird even takes much thought for the morrow. But the Rev. M. C. H. Bird tells me that he has seen these birds, when supplied with food during the winter, fly off with nuts and lodge them one after another in crevices of elm bark. Other observers have also noted the same thing.

Nuthatches are very fond of suet in cold weather ; and, like titmice, may easily be attracted to gardens by dainty morsels of various kinds, for they are practically omnivorous. In very hard weather they frequent farmyards, and pick up unconsidered trifles.

I have known men, ignorant of their habits, shoot these birds mercilessly for destroying rosebuds ; whereas the nuthatch is actually rendering the rose-grower excellent service by ridding his plants of aphid. Another frequenter of rose-bushes—the goldcrest—is rewarded in the same way for his useful toil.

“Alas ! I then have chid away my friend,”

would be a fitting epitaph for these martyrs.

About February the male bird begins to utter the long challenging whistle, so like an impatient summons to a dog, that marks the turning of his thoughts to love and war ; for both these games are played in the same high-handed way in which he makes raids upon his defenceless prey.

Curiously enough, when returning home one February morning after having written thus far out in the woods, three nuthatches fell into the road almost at my feet. Two of them I took to be males as they were engaged in a beak-and-claw encounter ; while the third, obviously a female, stood by behaving with that decorum and apparent indifference to the result characteristic of hen-birds bred in the best traditions of Avian society. As soon as the tussle was ended,

one bird immediately departed, while the others flew to a tall tree and began a game of hide-and-peek with each other varied by intervals of hunting for food, the male all the time uttering a soft musical "twi, twi, twi," flute-like and sweet to the ear.

Like many other species the nuthatch has a love flight. This, as described by Naumann, takes the form of a descent from the top of a high tree to that of a lower in a straight line, with wings and tail outstretched and body feathers puffed out, a proceeding which gives him a gay and ruffling but somewhat eccentric appearance. This display is frequently to be seen early in the year. But the love flight is sometimes taken together. Instead of wandering through the woods hand in hand after the manner of human beings when similarly "possessed," fondly imagining themselves to be alone, although the cynosure of hundreds of bright eyes, small birds like the nuthatch mount up and up into the sky as far as the eye can follow, and indulge in ecstatic raptures there under the boundless blue sky, before suddenly dropping to earth and taking up the real burden of life. On other occasions the male may be seen strutting along a branch, spreading his tail so that the white spots appear, and shivering his wings in such a manner that the rich chestnut of the flanks is brought into view.

Nuthatches begin to nest about the middle of April, selecting for their nursery a suitable hole in a wall or tree; often the *limb* of a tree is chosen in preference to the trunk itself. However large the original hole may have been, it is usually plastered up with mud till only just the size of the bird's body. The clay for this purpose is manufactured by the builders themselves, hence their local name of "mud-dabbers." If a portion breaks away during the nesting season, the breach is at once repaired. Dr. Kelso told me that he once repaired a tiny breach which he had made in the mud surrounding a nuthatch's nesting-hole, while the birds looked on. Immediately on his withdrawal however, they tore down his handiwork which was evidently not to their liking, and carefully mended the gap themselves.

Some years ago there was an account in the *Zoologist* of a nest

placed in the side of a haystack, built up with a mass of clay weighing no less than eleven pounds, the nest itself measuring thirteen inches in height. The entrance, however, is not always plastered; a great many nests may be found which show "no sign of mud, clay or stones."¹ Sometimes it is most difficult to tell whether this is the case or not, so well does the addition match the tree or wall. A pair of nuthatches occupied a hole in a garden-wall some years in succession. In this case the aperture was partly filled with a particularly hard kind of cement, "rough cast" on the outside. This was apparently done by the little builders' feet, with the result that the new work was brought into complete harmony with its surroundings, so that I had to examine it attentively to discover where the original mortar ended and that manufactured by the birds began.

Mr. F. Norgate describes various nests which he discovered, one of which was lined with very hard clay discoloured with small bits of lichen and indented everywhere by the bird's beak, so that it resembled the bark of the nut-tree in which it was placed. The entrance to another was blocked up with—"A starling, dead and stinking," while the "nuthatch was sitting with its bill almost resting on the dead starling." A third nest—"Made originally by *Picus major* had been used by great-tits and starlings. The nuthatch's nest was built in the putrid bodies of starlings." Mr. Norgate says he cannot explain this.²

One must, however, constantly bear in mind that birds can no longer be simply spoken of *en masse*. Photography and bird-watching, if they have taught us nothing else, have at any rate proved that there is as much individuality amongst birds of any one species as there is amongst dogs. I knew of a pair of nuthatches which built in a box, and made their nest entirely of the ethereal "wings" which waft the seeds of the Scotch fir to a considerable distance when the cones ripen and split. Almost as great a disparity of tastes may exist between birds of the same species as is to be found amongst those

¹ *Zoologist*, 1898, p. 480.

² *Zoologist*, 1880, pp. 42-45.

unfortunate human beings whose lot may be cast in the slums, when compared with their more successful brethren in suburbia.

In the accompanying photograph by Mr. Farren, a box has also been chosen as a nesting-place. Here not only is the hole in the door partially closed, but a considerable amount of cement was put between the box and the tree, some of which is visible on the box lid. As a rule the nest is largely composed of dry leaves or very finely shredded fir-bark—the inner fibre which is laid bare when a piece of the outer bark happens to be torn aside. Sometimes there is quite a long passage between the entrance hole and the actual nest.

When the young are a few days old they crowd to the entrance as soon as their parents approach. This year (1910) I received a message from a keeper telling me to come at once if I wished to secure photographs of a pair of nuthatches, “because the young were almost ready to fly.” The nest was in the trunk of an evergreen oak, some twenty feet from the ground. I was also told that the entrance had *not* been plastered with mud; and it was only when I climbed up, and scratched away some of the plaster with a knife, that I could be certain that the hole had been partially filled, so exactly did the bark and plaster harmonise. Yet, curiously enough, this difference in composition showed distinctly in the photograph; another instance of the well-known fact that the camera reveals more than is seen by the naked eye. When I looked into the nest, far from being ready to fly, the little nuthatches were not even feathered; but, the moment either of their parents alighted on the tree, they were aware of the fact, and crowded to the entrance so as to get served first, if possible.

When bringing food, the old birds would alight higher up the tree-trunk and climb down with short, sharp, audible jerks; and evidently the fledglings listened for this sound, which meant as much to them as a dinner-gong does to our own august but occasionally hungry selves.

The food of the young consisted largely of flies and small green caterpillars, which were usually brought one at a time by both

parents, who worked with extreme rapidity. Only a few seconds would intervene between the moment either bird alighted, and its actual presence at the nesting-hole. No wonder that there was a scramble for front seats! Sometimes both parents came together with food; this was frequently the case when they grew accustomed to the camera. Journeys to the nest were made at the rate of one in every four minutes.

I knew another family of nuthatches this year reared in a nesting-box. One of the number was bigger and stronger than his brethren and would climb on their backs, and thrust his head outside the box in order to be served first; but now and again, a sudden scrimmage within caused him to fall ignominiously backwards, a just reward for greed and pushfulness. Two broods are sometimes reared in the season. When this is the case the first family keeps with the male until able to fend for itself; but usually these birds are single-brooded. Young and old keep together for some time, wandering about in search of food; but sooner or later these family parties split up, for they are not nearly so gregarious as titmice.

When roosting these birds are said to sleep with the head and beak downwards¹ suspended from the bark of a tree. They certainly attach themselves to bark which is nailed up in an aviary in this manner. The old birds do not take kindly to captivity,—“Though readily eating almost anything that is given them, they soon kill themselves through their unceasing efforts to escape. The young, however, may be reared with less risk.” But they are better free; for of all our resident wild birds—the robin excepted—not one affords so much amusement or pleasure as the gay, rollicking nuthatch, who will attach himself to your garden, and eventually consider the whole estate his own, and you his willing slave. In return for food and kindness during the winter he will generously repay you a thousandfold, by helping to destroy just those insect-pests most injurious to plantations.

¹ Yarrell, vol. i. p. 477.

THE BEARDED-TIT

[ORDER: *Passeriformes*. FAMILY: *Panuridæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON. E. L. TURNER]

BEARDED-TIT [*Panurus biarmicus* (Linnæus). Bearded - reedling, reed-pheasant, marsh-pheasant. French, *mésange à moustaches*; German, *Bartmeise*; Italian, *basettino*].

1. **Description.**—The bearded-tit may easily be recognised by the small yellow beak, the general orange-tawny hue of the plumage, and the long, rounded tail. There is no seasonal change of plumage, but the male differs conspicuously from the female. (Pl. 67.) Length 6·75 in. [171 mm.]. The male has the crown of the head bluish grey, shading into pearl-grey on the ear-coverts and side of the neck. A black patch from the lores extends backwards so as partly to encircle the eye, when it joins a long loose tuft of lanceolate feathers, forming a pointed “moustache.” From the nape backwards to the rump the plumage is of an orange-tawny hue, but the tail-coverts and the three outer pairs of tail-feathers have white ends and blackish bases. The scapulars show a hoary whitish band along the outer border, while the wing-coverts are black, margined with rufous, but the inner major coverts and inner secondaries have a median band of black, and the secondaries have the inner web white, forming a band on each side of the body. The outer webs of the primaries are white. The under parts are greyish white with a rosy tinge, passing into orange tawny on the flanks and sandy buff on the abdomen, which contrasts with the black under tail-coverts. The beak and iris are of pale yellow, and the legs are black. The female is not so brightly coloured as the male, lacks the blue and pearl-grey on the head, the black moustache, and the black under tail-coverts; the back is commonly more or less distinctly marked with narrow longitudinal lines of black. In immature birds these lines are conspicuous, and are supplemented by similar lines on the crown. The juvenile plumage



Photo by Bentley Beetham

Bearded-tit's Nest and eggs



Photo by E. L. Turner

Male bearded-tit, showing "stride" of legs from reed to reed, and young in Nest

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differs from that of the immature bird in that there is no black on the head, but the back has a median band of black. [W. P. P.]

2. Distribution.—Found very locally, and only where there are extensive reed beds, from Spain, across Europe and Asia, to Manchuria. The Western race, to which our British birds belong, *P. biarmicus biarmicus* (L.), is in the British Isles now only found in the Broad district of Norfolk, although formerly, before the drainage of the fens, it had a more extensive range, and is said to have been resident in Devon, the lower Thames valley, Sussex, Essex, Suffolk, and the Fen district. On the Continent it is also found locally in East Spain, France, Italy, and Sicily, the Low Countries, and formerly in Germany; while from Hungary eastward it is replaced by the Eastern race. Although resident with us and in the Mediterranean region, it is only a summer migrant to Holland, probably wintering in the south of France. [F. C. R. J.]

3. Migration.—A resident and stationary species. Examples have been recorded from time to time from various parts of the midland and south of England, but as a rule the birds remain in the neighbourhood of their nesting haunts. [A. L. T.]

4. Nest and Eggs.—Usually placed close to the outer edge of a reed bed or among coarse vegetation on swampy ground. Most nests are among the stems of reed-mace and sedge or reeds, and not more than a foot above the water-level. It is by no means an easy nest to find, except on a perfectly still day, when the movements of the birds can be followed by the swaying of the reeds. The nest is compactly built of dead leaves of reeds, sedges, and occasionally grasses, lined with the flowering heads of the reed and not infrequently a few feathers, and is constructed by both sexes, the cock providing most of the material. (Pl. XXVII.) The eggs are generally 5 to 7, rarely as many as 9, in number, white in ground colour, sparsely scribbled over with fine streaks, scrawls, or spots of liver-brown. (Pl. D.) Average size of 106 English eggs, $\cdot 67 \times \cdot 54$ in. [$17\cdot 2 \times 13\cdot 9$ mm.]. The eggs are generally laid about the third week of April, occasionally as early as the beginning of the month, but young have been found in the nest up to September. Incubation, which is performed by both sexes, lasts about 13-14 days. Three and possibly even four broods may be reared in a season. [F. C. R. J.]

5. Food.—Insects and their larvæ, small molluscs, and probably seeds of the reed-mace. The young are fed by both parents on insects and their larvæ. [E. L. T.]

6. Song Period.—The species has no song proper. [E. L. T.]

THE BEARDED-TIT

[E. L. TURNER]

There is probably no species which has so benefited by the Wild Birds Protection Acts as the bearded-tit; for, owing to its restricted breeding area, this bird was at one time threatened with extinction.

Mr. J. H. Gurney, writing in 1899, gave "an approximate estimate of its decrease in five decennial years" as follows:—

1848	1858	1868	1878	1888	1898
160	140	125	90	45	33

This steady diminution he attributed to the "gradual growing up of the Broads, and to the systematic trade in bearded-tits' eggs."¹

Fortunately the egg trade can now only be carried on secretly; and the natural shrinkage of the open water has, in fact, meant vaster reed-beds, enough to afford these birds ample food and cover for years to come. Therefore, if the bearded-tits are rigorously protected now, why should they not in the near future increase so rapidly that their breeding area will naturally have to widen itself?

From my own experience I have no hesitation in saying that the bearded-tit has steadily increased in numbers during the last decade. In 1909 I knew of seventeen nests within one small area, which, at any rate, hatched off in safety, whatever may have been the ultimate fate of the fledglings.

Mr. Gurney's careful estimate for 1898, which resulted in thirty-three nests only, was based on returns from no less than twenty-two Broads. So that, if seventeen broods were reared in about a fifth of the area of the one reed-bed I am personally acquainted with, it is fairly safe to argue that the total numbers in one Broad alone must in 1910 have been largely in excess of the aggregate for twenty-two Broads in 1898. Nevertheless, too much care cannot be exercised in combating

¹ *Trans. Norfolk and Norwich Naturalists' Society*, vol. ix. p. 431.

the onslaughts of rabid egg collectors; and since the breeding area of this species is, for some reason or other, so restricted, and as its natural enemies are many, no efforts for its protection should be relaxed.

Not only is the "bearded-reedling," or "reed-pheasant," as it is locally called, practically confined to the Norfolk Broads district, but its actual breeding area is even more limited, for it is extremely restricted in its habitat, being abundant in some places, and scarcely known to nest in others.

There is one fact connected with the breeding of the bearded-tit which has hitherto been overlooked by its biographers. However fond these birds may be of the reed-beds proper, their nests will almost always be found in a mixture of sedge and "gladden"—which is the local name for the reed-mace. At least nine out of ten of those I have examined have been thus situated.

It is a comparatively easy task to mark down a pair of reed-pheasants and find the *site* of their nursery, but the discovery of the actual nest itself is another matter. It usually means wading ankle or knee deep in water, through dense masses of sedge, the sharp edges of which are apt to catch and cut one's hands unmercifully.

I shall never forget my first introduction to bearded-tits. I had been punted close to a thick sedge bush by a man known as "Lame Jack," who only had the use of one hand, and yet could manage any kind of small craft. With this one hand he held on to the sedges and told me to part them and look in. In my excitement and absolute ignorance of the nature of my surroundings, I stepped out of the punt to get a clearer view before my companion could utter a word of warning, and immediately found I was immersed up to the shoulders. Catching at the sedges to save myself, I inflicted various wounds upon my hands; nevertheless, I saw my first reed-pheasant's nest, and returned home wiser, but not in the least sadder.

The nest is not always built in such wet and inaccessible places: I have occasionally seen it amongst low growing sedge and rush on a comparatively dry marsh. It is composed of dry blades of the reeds

Arundo phragmitis, and lined with the same plant's brown feathery panicles. One which Mr. Pycraft examined—"Contained also feathers of swan, mallard, water-hen, and snipe";¹ another, noted in the *Field*,² was composed entirely of the panicle; but these are not typical. The nest is placed quite low down, only a few inches above the water-line, and amidst the densest cover, so that it is admirably sheltered also from inclement weather, and from the ravages of birds of prey. Both sexes assist in building, but frequently the feathery lining is added by the male after the first egg is laid; in fact, he often does quite two-thirds of the work. Both take turns in brooding, and are equally diligent in feeding the young; but individual birds vary considerably in temperament.

Sometimes nothing will induce the male to face a camera. The first pair I ever photographed caused me great amusement. Both were timorous, and for some time watched my shelter from a distance, clinging to the reed-stalks, and talking to one another. Finally the male caught a fly, gave it to his mate, and literally drove her to the nest, using wings and beak to emphasise his orders. Eventually the hen came slipping mouse-like through the sedges;—not alighting on a tall reed and climbing down, as is their usual method if undisturbed. After a while her nervousness vanished, and she fed her brood diligently: but during that day and the next only once did her mate accompany her while I was there; though I often heard him climb up the side of my tent, in order to inspect its occupant, and sometimes caught him peeping through a thin place in its reed-thatched exterior. Curiously enough, out of twelve plates exposed, the one depicting both birds together was the only successful photograph: for when my camera was uncovered at the end of the day, the bellows had become detached owing to damp, and all the other plates were fogged. On another occasion, however, a male which had lost his mate showed absolutely no concern; he had double work to do, and there was no room for fear in his strenuous little

¹ *British Birds*, vol. ii. No. 2, p. 58.

² *Field*, vol. cii. p. 722.

life, but he allowed me to stand outside my shelter and expose plate after plate, merely remonstrating occasionally, or puffing out his beard by way of protest.

The earliest nest recorded is one which the Rev. M. C. H. Bird found with three eggs on April 3, 1903; and the latest I have ever seen was on September 23rd, containing nearly fledged young. Two and sometimes three broods may be reared in the season.

In early spring, when the bearded-tit begins to contemplate family cares, the reed-beds are golden as an August cornfield, and the tall brown "pokers" look frayed and ragged. When the birds alight on these their tawny plumage with its soft blending of buff and brown, exactly harmonises with its surroundings; and even the male's conspicuous grey head and black beard tone with the decayed portions of vegetation surrounding their homes. They practically spend their lives amongst the reed-beds: I have never seen one perching on a bush or tree.

They are most remarkable contortionists. Few birds can twist their lithe bodies into such curious attitudes as the bearded-tit—especially the female—is capable of doing; in addition to which they perform all kinds of feats amongst the reeds, one of which is particularly delightful. Sometimes with one foot planted above the other on a half-decayed stem that bends beneath its weight and sways before the wind, the bird will slip right round the reed several times in succession. When feeding the young it will grasp with either foot reeds often several inches apart, and from that position bend down to the level of the nest and feed the young. The female, when slipping through the undergrowth, turns and twists in a remarkable manner, in order to dive into the recesses of the nest or reach the outermost one of her brood.

The photographer's ears need to be as keen as his sight so that he may catch the faintest sounds which herald a bird's approach. This is pre-eminently the case with the bearded-tit, which can be heard slipping through the herbage for some time before it actually

appears; sedges, too, have a peculiar rustle of their own, increased in this instance by the length of tail which the reedling drags behind it. For a moment the bird looks like a downy ball, because when foreshortened the bearded-tit seems to have no neck; but as the eager brood, roused by the approaching rustle, suddenly thrust up their wide gapes, the downy ball becomes elongated, and with rapid sinuous movements administers food to each in turn.

The young when first hatched are an ugly slaty grey colour, and without a trace of nestling down. Their most interesting feature is not displayed till they open their mouths, when the peculiar palate markings are brought into view. Attention was first called to these by the Rev. M. C. H. Bird, but so far science has not found an explanation of their presence. They have been accurately described by Mr. Pycraft as follows:—"Briefly these markings take the form of four rows of pearly white, conical peg-like projections suggesting the palatal teeth of reptiles, ten on either side of the middle line. These tooth-like bodies are not of uniform size, and are set in a background of black surrounded by rich carnelian red, the whole being framed in by the lemon-yellow gape-wattles, which are not very strongly developed. The tongue is black with a white tip, and with a pair of white spurs at its base."¹

The younger the nestlings, the more conspicuous do these projections appear, so that the interior of the palate looks like a minute harrow. The four outer ones on either side are in a straight row, while the other twelve are dotted about irregularly between. They are still present when the young leave the nest, but disappear ultimately; though I have not been able to discover how long they persist, nor whether they drop off or become absorbed.

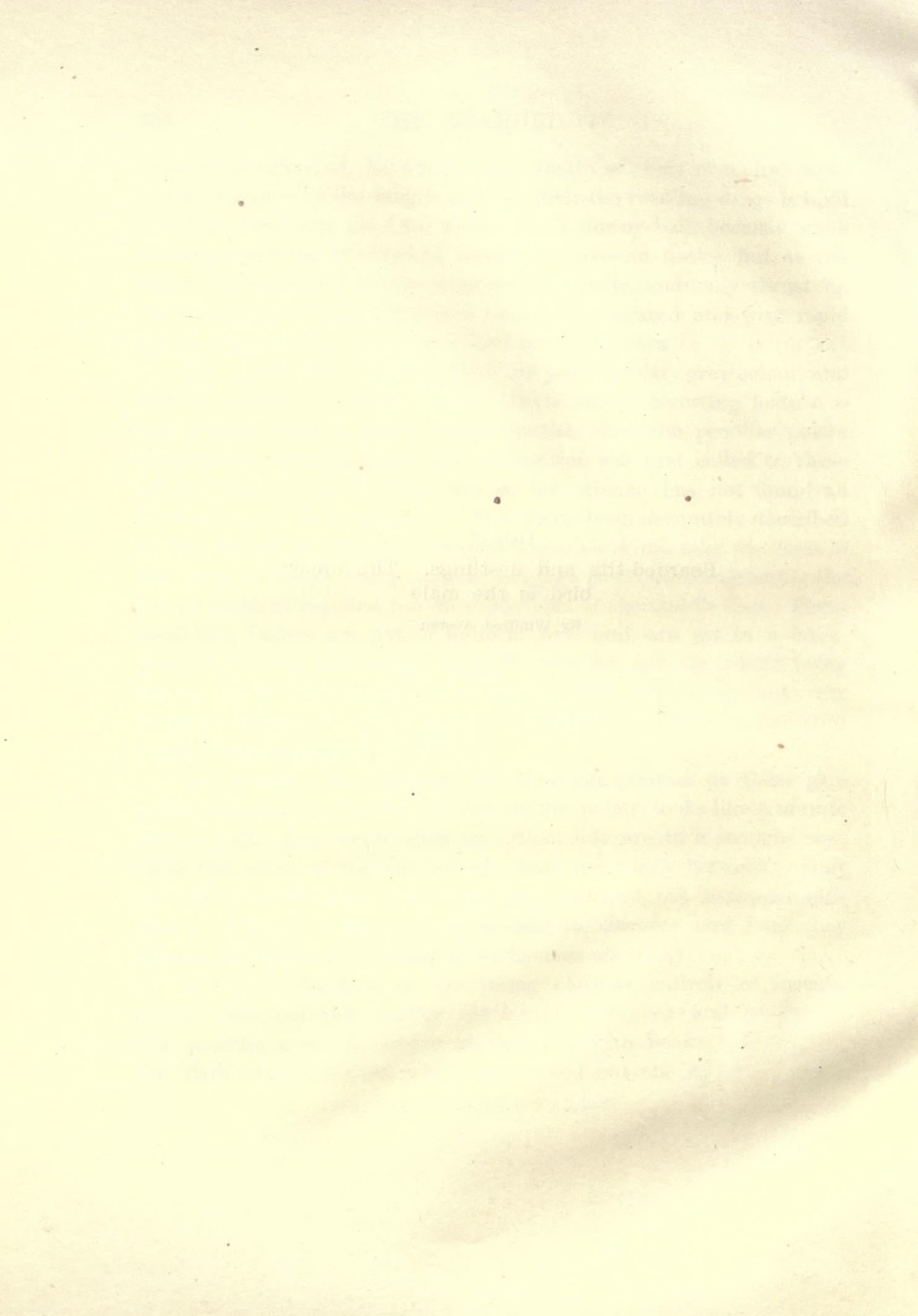
The food supplied to the young consists entirely of insects, chiefly flies and the smaller species of *neuroptera* and *trichoptera*. The parents generally arrive at the nest with beaks full of such tiny dark-winged insects, which are meted out one by one. Later

¹ *British Birds*, vol. ii. No. 2, p. 58.

Plate 67

Bearded-tits and nestlings. The upper
bird is the male

By Winifred Austen





broods are fed largely on delicate ethereal-looking insects, such as the May-fly and scorpion-fly. Caterpillars also form part of their diet; if an unusually large juicy one is brought, it is thrust down the throat of one eager applicant, where it remains as in a vice, and is then divided amongst the brood. There is an abundant food supply among the reed-beds, and the parents need seldom go far afield on foraging expeditions. Therefore it is no unusual thing to find several pairs of bearded-tits nesting in a small area, as the struggle for existence is reduced to a minimum; in fact, except at pairing-time, this species is decidedly peaceable and sociable.

The call-note, louder and sharper in the male, is usually represented by two syllables, "ping-ping," which, though expressive, is yet wholly inadequate to describe this vibrating sound, which is like the "singing" of a bullet, or a pizzicato note on the violin. Once heard, it cannot be confused with any other bird-call, though several species imitate it—notably the reed-warbler. One of the latter birds, which sang continuously by my house-boat during 1909-10, frequently began his song with this "ping-ping," so that I was at times deceived and would look up expecting to see a bearded-tit fly past.

When anxious they have a scolding note, "*p'whut*," which is often uttered as the old birds slip down a reed-stem to feed the young. This note is more easily represented by drawing a finger lightly across all four strings of a violin. The bearded-tit's notes are very limited, but intensely resonant, and from their rarity never fail to thrill the heart of the bird-lover; for it is always worth his while to watch this delightful species, no matter upon what other business he may be intent. They have no proper song, but during the breeding-season, in common with many other birds, their voices are capable of a variety of modulations, equivalent to our "baby-language." The note of the young resembles the adult bird's alarm note, but lacks the clicking sound which precedes the "*whut*."

One calm evening early in May, when there was no whisper of

wind among the reeds, but a strange stirring of life in the air, I gently drew my canoe along by hanging on to the adjacent sedges. Soon a series of faint "*whuts*" proceeded from a little oasis of mud a few yards in front of me, so I stayed still and watched. Crouched on the ooze, and partly concealed by a few decayed reeds, were five young bearded-tits. My face was almost on a level with the water, and as I looked ahead I could distinguish four distinct bands of colour, all mysteriously blended—grey water merging into the green of the young "*colts*,"¹ surmounted by a vast sweep of golden reed-beds reaching up into the blue haze of a May evening. Somehow the beautiful bearded-tits, both young and old, seemed a part of this colour scheme, and hardly to be separated from it. Presently a fine male, tawny and grey, alighted on a reed-stalk and slipped down it, resenting deeply my intrusion into his domestic circle; meanwhile his mate rushed hither and thither over the mud, quite ignoring me, bent only on supplying the needs of first one and then the other of her hungry little ones. It was an ideal spot in which to hide a family of young reed-pheasants scarcely able to fly; at the faintest suspicion of alarm, they could leave the oasis of mud and take refuge in a dense reed-bed close at hand.

On 5th May 1910, I came upon three families in a similar situation. There were about fifteen young birds dotted around the edge of a little inland lagoon, which was surrounded by a stubbly fringe of reeds; these had been cut down the previous year and were just beginning to grow. A narrow dyke ran alongside, and again by holding on to the vegetation, I edged my canoe close to the birds and watched.

The air was full of the hum of insect life, and scores of delicate winged flies were seized by the busy birds for their hungry broods, which, by the bye, are not clamorous as are the young of so many other species, but appear quite contentedly to await their turn. Up in the blue sky redshank were whistling, while lapwings called to one

¹ Local name for them.

another, or hurled themselves towards the earth and rose again in an ecstasy of love and madness, snipe bleated dreamily, and peace reigned. Suddenly the hitherto brilliant sun became over-clouded, the wind arose, and away over the Broad came the sound of lashing hail upon the open water. In two minutes I was back in my house-boat behind closed doors, while less than twenty minutes later my man was shovelling away ice from the stern-sheets before the doors could be again opened. I cannot tell what became of the tits. It seems to me that such sudden changes of temperature, together with the tremendous downpour of rain or hail, must surely destroy numbers of half-grown birds; at any rate, I did not again see so many bearded-tits in that one spot. While yet in the nest they are so well hidden amongst dense undergrowth that they do not suffer much from exposure. But sudden storms shatter birds' nerves, and inexperienced young cannot always be quickly rounded into a place of safety by half-distracted and anxious parents.

As soon as possible after leaving the nest, the young are taken to the denser reed-beds, and cannot then be easily watched. Now and again one may catch sight of a nearly full-grown bird clinging more or less clumsily to the swaying stems waiting to be fed. But as soon as they can fly they roam about in little family parties, flitting from place to place, sometimes keeping with the male bird, until the cares of a second helpless family once more engross his attention. Even then, I have seen a much harassed cock deprived of his mate persistently followed day after day by his grown-up family; but he had no time to attend to their wants, and, in fact, seemed completely to ignore them, neither resenting their constancy nor taking any steps to rid himself of their company.

After the breeding season, these family parties collect together and roam from broad to broad. As winter approaches, they may be seen in flocks of from twenty to forty; but like the crested-tit, these flocks do not wander outside their breeding area, though a few stragglers may occasionally do so. At all seasons of the year they

dislike wind, yet on a still winter's day, such a sight as Stevenson graphically describes is by no means uncommon:—"I have more than once observed a flock from some neighbouring broad, their presence overhead being indicated by the clear-ringing sound of their silvery notes; and in autumn, after roosting in small parties on the reeds, they will fly up simultaneously soon after sunrise, swarming for a while like a flock of bees, uttering in full chorus their pretty song, and then disperse themselves over the reed-beds for their morning's meal. Delicate as these little creatures appear, I have found them during the sharpest frosts, when the snipe had left the half-frozen waters for upland springs and drains, still busy amongst the reed-stems, as lively and musical as ever."¹

As with the crested-tit, there appears to be no reason why the reed-pheasant should be so extremely local in its habitat; but it does not at any time seem to have had a wide range within the British Isles, though it has been recorded in twenty-six counties, and probably bred in at least eleven. Some solution of the problem of its limited distribution must surely be sought for in those far-away times, when perhaps its present breeding area here was the most westerly limit of its range. It is common enough in Holland, and in spite of its feeble flight has been known to journey over seas, for Gätke records it four times at Heligoland.²

The bearded-tit's manner of flying is peculiar. In a way it resembles that of the longtailed-tit, but the similarity is due merely to the fact that both species have long tails; for while the longtailed-tit projects itself through the air somewhat rapidly, the flight of the bearded-tit is laboured, undulating, and slow. But the special point of interest in the mechanism of this bird's flight, is the rhythmic double-movement of the tail, which is spread out fanwise, and at almost the same moment given a swift spiral twist. This double movement is extremely rapid, but very apparent, especially in windy weather—though as the bearded-tit dislikes wind, it seldom flies far in a rough breeze.

¹ *Birds of Norfolk*, vol. i. p. 151.

² Gätke's *Heligoland*, p. 419.

I once rescued two pairs of Dutch bearded-tits from a London dealer; but, unfortunately, they were carelessly packed, and one of the hens was badly injured by a nail left with its point protruding some distance inside the box, and she, consequently, only lived a few days. I put the surviving male into one cage, and the other pair into another, while a section of my aviary was hastily transformed into a very tiny marsh.

During the short time I kept these birds in captivity, they seemed to me quite the most affectionate species imaginable. The cock and the hen roosted close together, with all their contour feathers fluffed out, so that they looked like one round fluffy ball. The male always spread one wing over the female, but this was almost hidden in the soft feathery mass.

When feeding, they frequently scratched on the floor of the aviary, after the manner of barn-door fowls; perhaps because in the wild they so often hunt for food amongst the ooze. They bathed every day, and always together; their ablutions over, they would then fly up to a perch and sit huddled up until dry on one side; then reversing their respective positions, they proceeded to dry the other side, mutual warmth evidently greatly facilitating this process.

On very cold days they would tunnel several inches into the coarse herbage, and for hours disappear from view entirely. One of these tunnels was considerably over a foot in length, and close to the ground; so that, not being able to see the birds, and discovering this tunnel, I supposed a rat had by some mischance burrowed through the aviary floor and carried them off; but they were safe and warm, nestling together at the far end out of the wind.

Unfortunately, at the end of two months the hen suddenly dropped dead. I then put the two cocks together, and they lived in the same loving fashion, roosting and bathing in exactly the same way as the pair had done.

A writer to the *Field* describes how, when the hen of a pair of bearded-tits—which he kept in captivity—died, the cock was incon-

solable until a small looking-glass was placed in his cage, when he at once appeared perfectly happy, taking his food and nestling close to the glass, uttering a series of soft low musical notes eminently expressive of happiness.¹

My two males continued to live in perfect concord until the end of April, when I was asked if I would take charge of a hen bearded-tit and let her loose in Broadland. I one day called for this hen and let her loose in my aviary with the two cocks. There was immediate discord. One of the cocks was exceedingly handsome and in splendid plumage, the other had lost his tail and was generally unkempt. The hen showed decided preference for the handsome male, and at once began preening herself with a very self-conscious air, and an evident desire to please. The tailless male was driven into a corner, and so severely handled that he had to be rescued from the clutches of his handsome rival. Having finished her toilet operations, the female began to execute a curious dance, while her lover at once commenced to court her assiduously in the manner hereafter described. Three days later I went to Hickling, carrying with me all three birds, the pair in one cage, and the single male in another. It was a calm and beautiful evening when I arrived, so, uncovering the cages, I placed them on the top of my house-boat. When the captive birds heard the call-note of their own species they became wildly excited, beating themselves violently against the bars of their prisons, making such desperate struggles to regain their freedom that I quickly released them. They rose some distance into the air with loud resonant call-note, then dropped into the reed-beds, and I saw them no more. There was abundance of food, so that I had no hesitation in turning these little Dutch captives adrift. Sometimes these birds feed largely on a destructive grub which burrows into and destroys the reeds; it also hunts for tiny mollusca amongst the ooze. In windy weather the reed-pheasant is seldom seen on the wing, but keeps to the sheltered reed-beds, where they probably find abundance of

¹ *Field*, 1883, 310.

food at the base of the stems, and this may be the reason why caged birds scratch in sand and mud on the aviary floor. I could not induce my tits to eat any kind of seed, but during the time I kept them caged I used to supply them with loose tufts of matted vegetation, consisting mostly of canary seed, which sprouts rapidly, but has no depth of root. When this was given to the bearded-tits they instantly set to work tearing the loose mould away, and picking out minute white larvæ, so that very soon a fair-sized lump of this friable earth was evenly spread over the floor of the cage. So fond were the birds of this material, that after a few days they would fly down on to my hands and attack the mass as I placed it in the cage.

If so much food could be found in a few square inches of matted vegetation in January and February, surely there must be a plentiful supply of larvæ in those swamps which later on teem with millions of insects. When, however, the marshes are frost-bound, bearded-tits may possibly be able to subsist on the seeds of the reed-mace, much in the same way as coal and marsh-tits will thrive on the seeds of conifers.

The fact that these frail-looking birds can endure the rigours of a Broadland winter tends to prove that their diet must be a catholic one. In hard weather they may often be seen clinging to the reed-mace pulling the "pokers" to pieces, but whether for the sake of the seeds, or for minute larvæ which may be concealed therein, I cannot say—perhaps both. As the larvæ of *Laverna phragmitella* commence to burrow into the reed-mace during August and remain there all the winter, causing the "pokers" to burst out and become fluffy, it is more than probable that the bearded-tits are searching after the larvæ rather than feeding on the seeds of the plant; just as the longtailed-tit will pull to pieces moss and lichen in its search after the insect-life concealed therein.

The winter flocks live amicably until pairing-time. Lubbock says that at night they nestle in a cluster on the same reed, males and

females together. The behaviour of my captives, when roosting, confirms this statement.

As spring approaches, the flocks disintegrate, and the males fight furiously. When courting the female, the cock erects his grey head-feathers, and puffs out the long black beard in a way that is obviously quite irresistible. The long tail is held erect, so that the jet black under-coverts are brought into prominence. The female will occasionally execute the curious dance already mentioned, which resembles a minuet in its slow stateliness, while both at intervals fluff themselves out. Before settling down to family cares, a kind of nuptial flight is taken. This is beautiful to watch, and surprising to one who has hitherto only seen these birds flitting somewhat clumsily from cover to cover. Both leave the sheltering reed-beds, and with clear call-note, rise gradually into the air. There is no undue haste when once the couple begin to soar. With outstretched wings and quivering tail they float upwards: sometimes the male will be uppermost, sometimes the female, so they rise alternately, until both are mere specks in the blue. Then suddenly they drop like stones into the reeds.

So once more the cycle of their little lives is set in motion, until as the year waxes and wanes—

“They in their brief life have fulfilled,
All Nature in them will'd.”

THE SHRIKES

[ORDER: *Passeriformes*. FAMILY: *Laniidæ*.]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON. E. L. TURNER]

REDBACKED-SHRIKE [*Lanius collurio*, Linnæus. Butcher-bird, pope, nine-killer, flusher. French, *écorcheur*; German, *rotrückiger Würger*; Italian, *averla piccola*].

i. Description.—The male redbacked-shrike may be recognised by its black face, grey crown and neck, red back, and black and white tail; the female lacks this brilliancy of coloration, having the upper parts of a dull brownish chestnut. (Pl. 68.) Length 7 in. [178 mm.]. In the adult male the forehead, lores, and auriculars are black, the crown, nape, and back of the neck ash-grey; the mantle Indian red, contrasting with the rump, which is ash-grey. The lesser wing-coverts are of the same hue as the mantle, the greater coverts and inner secondaries dark brown with broad red margins, while the primaries and outer secondaries are dark brown. At the base of the primaries is a white patch, concealed by the major coverts. The tail has the outer feathers white, with an oblong hatchet-shaped patch of black on the inner web: in the succeeding feathers the black extends to the outer web, while the middle pair are wholly black; thus, in the closed tail, a large basal patch of white is seen on either side of the central feathers. The throat, abdomen, and under tail-coverts are white, the breast vinous. The female differs from the male in having the upper parts of a pale, dull chestnut, tending to grey on the back of the neck and rump. The ear-coverts are dark brown, the throat, lower breast, and abdomen dull white, while the fore-breast and flanks are buffish white, conspicuously 'laced' with black. In the juvenile plumage the upper parts are reddish grey, deepening on the mantle to light red, the whole being barred with black. The crown feathers, however, are grey, with a subterminal bar of black and an outer fringe of reddish grey. The lesser wing-coverts are grey, barred like the rest of

the upper parts with dark grey; the median coverts are similarly barred, but have a spot of pinkish between the subterminal bars, while the major coverts are dull greyish red, relieved by a narrow line of black running round the middle of the outer vane. The inner secondaries are conspicuous on account of the margin of madder-red down the outer vane. The throat is greyish white with grey vermiculations, and the breast and abdomen are similarly coloured, but without the vermiculations. The fore-breast and flanks are of a buff-grey, barred with dark grey. [W. P. P.]

2. Distribution.—During the breeding season it is distributed over nearly all Europe, from 64° N. to the Cantabrian Mountains in Spain, Northern Italy, and the mountains of Greece, while in Asia it inhabits the mountain regions of Asia Minor, N. Persia, and Transcaspia. Local races have also been described from the Caucasus, as well as from Corsica and Sardinia. In the British Isles it is a summer visitor to the midland and southern counties of England and Wales, but is very scarce on the extreme west (Cornwall and Pembroke) and in N. Lincolnshire. North of lat. 53° it becomes rare, although on the west of the Pennines it has been known to breed in Lancashire and the Lake district, and on the east side in West Yorkshire. There is but one dubious record of its breeding in Scotland, viz. in Lanark in 1893, and it has not been known to nest in Ireland. (For details of distribution, see O. V. Aplin, *Trans. Norf. and Norwich Nat. Soc.*, v. 286.) The winter home of this species is in tropical and Southern Africa, ranging to the eastern Cape Colony, Pondoland, Natal, etc., which it reaches by way of S.E. Europe, Egypt, Arabia, and thence by the Nile valley. In S. Spain and Morocco it is of very rare occurrence. [F. C. R. J.]

3. Migration.—A summer visitor to the southern part of Great Britain; an occasional migrant farther north, sometimes remaining to breed. The Scottish occurrences have not been numerous, although widely distributed, there being records even from Shetland and the Outer Hebrides (cf Saunders, *Ill. Man. B. B.*, 2nd ed., 1899, p. 151; and Clarke, *Annals Scot. Nat. Hist.*, 1907, p. 73; and 1910, p. 199). The only Irish record is for County Down, 10th August 1878 (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 44). The chief spring immigration appears to occur by way of the south-eastern counties of England, from Hampshire to Norfolk. Exceptionally a bird has been recorded as early as 13th April (1905), and a few usually appear late in the month. The main influx sets in during the first week of May, and is at its height until the middle of the month, after which it rapidly dwindles. The birds settle down to their nesting duties very quickly. Their



Photo by E. L. Turner

Male redbacked shrike at Nest



Photo by E. L. Turner

Female redbacked shrike at Nest

sojourn is a brief one, for in August the family parties begin to wander, and most of the birds have quitted our shores by the end of the month. But emigration drags out for some time longer, and a bird has been recorded from a Suffolk lightship as late as 21st October (1908) (cf. *B. O. C. Migration Reports*, ii. p. 111; v. p. 248, etc.: and Ticehurst, *B. of Kent*, 1909, p. 119). As regards habits, this species appears to migrate "generally singly and sometimes in couples" or small parties—at any rate, so far as concerns our area (cf. *B. O. C. Migration Reports*, i. p. 79, etc.). [A. L. T.]

4. Nest and Eggs.—Generally placed in straggling hedgerows, thorn bushes, or clumps of brambles on commons, waste lands, or by the sides of lanes and roads. Some nests are quite close to the ground, and others as much as 10 feet above it, but the usual height is about 3 to 5 feet. A good deal of moss is used in the foundation of the nest, which is somewhat bulky, and is constructed of stalks, bents, etc., lined with fine roots and grasses, as well as wool, hair, and down. (Pl. XXVIII.) Both share in building, but the shaping of the nest is usually, if not always, done by the hen. The eggs are usually 5 or 6 in number, but sets of 7 are not very scarce, and 8 eggs have been found in one nest on the Continent. They vary much in colouring, but on definite lines, and have certain characteristics in common. As a rule they are sparingly marked with spots, which form a zone at the big end, while the ground colour varies from white to cream, salmon-pink, pale olive-brownish or greenish, sometimes almost blue, and exceptionally deep reddish or bright green. Eggs with a pink or reddish ground are marked with sienna or red, and greenish eggs with umber, and as a rule the markings are brown or reddish, with leaden shell markings. (Pl. D.) Average size of 360 Continental eggs, $\cdot 87 \times \cdot 64$ in. [$22\cdot 1 \times 16\cdot 4$ mm.]. British eggs are, as a rule, rather larger. The breeding season begins about mid-May, but most eggs are laid towards the end of the month or early in June. Incubation lasts for 14 days, and is performed by the hen alone according to Naumann, and only one brood is reared in the season. [F. C. R. J.]

5. Food.—Small birds, lizards, mice, beetles, humble-bees, and insects generally. The young are fed by both parents, principally on insects, occasionally on birds and shrew-mice. [E. L. T.]

6. Song Period.—The few notes composing its song can be heard irregularly during May and June. [E. L. T.]

GREAT GREY-SHRIKE [*Lanius excubitor*, Linnæus. French, *pie-grièche*; German, *Grauwürger*; Italian, *averla maggiore*].

1. **Description.**—The great grey-shrike is to be distinguished by its pearl-grey upper parts, relieved by black wings marked by a double or single white wing-bar, and a black and white tail. (Pl. 69.) Length 9·5 in. [241 mm.]. The adult male, as above indicated, has the upper parts of the plumage pearl-grey, set off by a conspicuous black area extending from the lores over the ear-coverts, and a white patch formed by the hindmost scapulars. The wings are also black—with the exception of the lesser coverts, which are grey—and, when extended, display a broad white bar across the bases of the remiges; but in the closed wing this bar is usually broken up to form two more or less conspicuous white areas on the primaries and secondaries respectively. The innermost primaries and the secondaries are tipped with white. The outermost tail feather is white, with the exception of the base of the inner web, which is black, the black running some distance upwards along the inner side of the shaft: in succeeding feathers this black area increases, extending to both webs, and working down to the tip of the feather till the central feathers have only white tips, while the two middle feathers are wholly black. The under parts are dull white, often with a pinkish tinge on the fore-breast. The female differs from the male in having the grey of the upper parts less pure, and the under parts more or less conspicuously tipped with semi-lunar lines of grey, only faintly traceable on the flanks. The juvenile plumage differs from that of the adult in having the upper parts ash-brown, finely vermiculated on the crown and hind-neck with grey, and faintly barred with grey on the rump, scapulars, and upper tail-coverts. The lesser wing-coverts are slate coloured, with brown fringes; the major coverts black, tipped with brown, while the remiges are tipped with buff-white. The lores and ear-coverts are dull black, the throat white, barred with ash-brown; the fore-neck, breast, and flanks are greyish buff irregularly barred with grey, and the abdomen is white. [W. P. P.]

2. **Distribution.**—This species has an extraordinarily wide distribution, but is divided into numerous local forms, which inhabit the whole of Europe, almost all Asia, Northern and Central Africa, and North America. The North European form, *L. excubitor excubitor*, Linnæus, is the one which occurs in the British Isles. Its breeding range extends from Northern Scandinavia and Russia over the greater part of the Continent, but in Spain and Portugal, as well as in S. Russia, it is replaced by two other forms, and is absent from the Italian and Balkan

peninsulas. It is everywhere somewhat local, isolated pairs nesting as a rule at some distance from one another. In the southern part of its range it is sedentary, wandering to some extent after the breeding season, but in the north of Europe it is only a summer visitor, migrating southwards as far as the British Isles, South France, Italy, the Balkan peninsula, and the Caucasus. [F. C. R. J.]

3. Migration.—An irregular migrational and winter visitor from Northern Europe. Its occurrences are naturally more frequent on the eastern seaboard of Great Britain, especially in Yorkshire and southwards, but there are records for most parts of our area, including Shetland and county Sligo (Ireland). Westwards and in Ireland the occurrences become very irregular, and are practically confined to the late autumn and winter months. These are also the times of the majority of the occurrences on the east coast of Great Britain, where the first immigrants usually arrive from across the North Sea late in October, a few being recorded almost every season. There are also occasional records for the spring passage, and even for the summer months, although the species has not been known to breed within our area. The great grey-shrike is usually a solitary traveller, and for subsistence by the way it levies toll on the smaller migrants. (Cf. Saunders, *Ill. Man. B. B.*, 2nd ed., 1899, p. 147; Ussher and Warren, *B. of Ireland*, 1900, p. 43; Witherby and Ticehurst, *British Birds*, i. p. 147; Nelson, *B. of Yorks*, 1907, p. 138; Ticehurst, *B. of Kent*, 1909, p. 115; etc.) [A. L. T.]

4. Nest and Eggs.—Although statements have been made to the contrary, there is no proof that this species has ever nested in the British Isles. For purposes of identification the following brief details are given. The nest is generally placed much higher than that of the redbacked-shrike, often on the side branches of an oak or other forest tree and usually commanding a wide view. It is also found in orchards in middle Europe, but in the high north in small birches. The materials used are twigs, dead grasses, moss, etc., lined with roots, hair and wool and a thick layer of feathers. It is a bulky edifice and warmly lined; it is built by the hen, the cock bringing materials (Sachse). Eggs usually 5 to 7, rarely 8 or even 9 in number, greyish buff to greenish grey in ground colour, blotched and spotted with varying shades of olive-brown and purplish grey. An abnormal type with green ground is also said to occur. Average size of 117 eggs, $1.03 \times .75$ in. [26.28×19.28 mm.]. The breeding season in middle Europe begins during the latter part of April, but in the high north not till late in May or early in June. Incubation, apparently performed by the hen alone, lasts about 15 days. Single brooded as a rule, but there

is no doubt that occasionally a second is reared (*Journ. für Ornithologie*, 1875, p. 422). [F. C. R. J.]

5. Food.—Insects, including beetles and grasshoppers; also wasps and larvæ of *Vanessa urticae* (Stevenson, *Birds of Norfolk*, i. p. 62), and *Sphinx tiliæ* (Jäckel, *Vögel Bayerns*, p. 198): lizards, small frogs, birds and field mice. The last-named are the staple food of this species during the winter months. Of birds many nestlings of various species are taken in the breeding season; also small birds such as various tits, buntings, finches, wrens, and goldcrests, occasionally skylarks (*Birds of Norfolk*, i. p. 62), and even members of the thrush genus (blackbird, fieldfare, etc.), while, according to Naumann, it will attack partridges when caught in snowdrifts. Indigestible portions of the food are thrown up in pellets. [F. C. R. J.]

6. Song Period.—On the Continent the song is chiefly heard on fine days in the winter months and during early spring. Mr. F. Kerry heard one singing on December 6, 1879, near Harwich (*Zoologist*, 1880, p. 70). [F. C. R. J.]

The following species and sub-species are described in the supplementary chapter on "Rare Birds":—

Lesser grey-shrike, *Lanius minor* Gmelin.

Continental-woodchat, *Lanius senator senator* Linnæus, and

Corsican-woodchat, *Lanius senator badius* Hartlaub.

Masked-shrike, *Lanius nubicus* Lichtenstein. [F. C. R. J.]

REDBACKED - SHRIKE

[E. L. TURNER]

Redbacked-shrikes are almost the last of our summer migrants to arrive, and the first to depart. They are not numerous even in the counties where they do breed, although more plentiful in some years than in others; but on the whole it seems to me that they have decreased in numbers of late years; at any rate this is the case in districts with which I am familiar throughout Kent, Sussex, and Norfolk. They are by no means restricted in their choice of a habitat, but may be looked for in woods and gardens, or amongst the thick bushes dotted about the marsh-lands. In their private capacity they are gentle and affectionate, but outside the domestic circle few birds are more hated and feared, for they possess all the rapacity of birds of prey, without a shadow of a claim to kinship with the nobler raptures.

The two sexes differ in plumage as widely perhaps as do any of our British species; both are bold-looking, handsome birds, the male being a fine admixture of reddish brown, black, and grey, with eyes keen as a hawk, flashing defiance from amidst a setting of black feathers, which seems only to give them added brilliancy. The female is quite as handsome in a more restrained fashion; for the exquisite marking on breast and flanks abundantly compensate for lack of colour. Occasionally females have been observed differing very slightly in plumage from the males, and curiously enough these abnormally coloured hens are not necessarily old birds which have assumed the plumage of the males, as is frequently the case with many gallinaceous birds; for on more than one occasion young females—birds of the year—have been shot in plumage that more or less resembled that of their more brilliantly coloured mates.¹

This species rejoices in a great number of names—upwards of

¹ Yarrell, vol. i. p. 212.

ninety have been applied to it in France and Savoy;¹ but not one of these has any affinity to our own word "shrike," which probably is derived from its shrieking or screeching call-note. William Turner first applied this name to the family in 1544, but evidently had in his mind the great grey-shrike, for he describes it as a bird with—"A big and gristly head, in colour wholly grey."²

The redbacked-shrike is most generally known locally as the butcher-bird, owing to its habit of slaughtering small birds, mice, or insects, and impaling them on thorns, ready for consumption when required. I do not think that every pair of shrikes necessarily does this, for the so-called "larders" are few and far between, and a search for one, however careful, in the vicinity of the nest will often result in failure. The victims which are transfixed in this fashion are many and varied; nestling birds—especially young blue-tits—humble-bees, beetles, shrew-mice, and flies being the most numerous.

The butcher-bird will pursue any of our smaller species, striking at them from above, dashing them to earth, and then picking out their brains. If wanted for his own nursery, he will proceed to pluck a helpless young tit, and either spit it on a thorn at once for future use, or carry away one portion and impale the rest. No wonder that he is often mobbed by the smaller warblers, which, especially if they happen to be whitethroats, will make the woods echo and re-echo with righteous indignation. Even the gentle goldcrest is roused to deeds of valour if a marauding butcher-bird approaches his daintily poised nursery too closely.

Mr. Patterson records an instance in which he saw a shrike feasting on a fieldmouse, to which it added, by way of dessert, a humble-bee or two and some beetles.³ He also tells of a friend of his, an enthusiastic bee-keeper, who obtained a nest of young shrikes and hung them up in a cage, so that the parents might assist him in their up-bringing. The old birds attended them most assiduously, bringing

¹ Newton, *Dictionary of Birds*, p. 84.

² *Wild Life in a Norfolk Estuary*, p. 230.

³ *Turner on Birds*, p. 110.

Plate 68

Redbacked-shrikes in their larder. The
lower bird is the male

By A. W. Seaby



lizards, mice, wasps, butterflies, humble-bees, and *some of his own* bees! The floor of the cage was strewn with insects, many scarcely hurt, which crawled and fluttered about the cage "like a menagerie." He afterwards let the shrikes go, but in the end had to shoot them, otherwise they would have devastated his hives.

Another observer mentions a larder which contained—"a young, almost fully fledged, blue-tit, two young pheasants, which had not been touched, and two more young pheasants which were half eaten; also the remains of several other young birds, which were too far gone to be identified. In every case the birds were impaled on thorns running through their throats. Although I looked carefully, I could not see any beetles or anything else but young birds. The birds were not grouped together, but scattered about all round the tree."¹ In this instance the shrike's nest, which was close at hand, contained eggs only, and these had been incubated about a week; so that the food must have been required for the adult birds' own consumption, unless indeed nestling shrikes prefer their game "high"! Gould infers that only the useless and rejected portions of food are strung up, but he evidently looked upon the shrike's larder as a rarity, having only seen it, as he himself says, "more than once";² therefore his evidence is not conclusive.

If food happens to be plentiful birds can afford to be dainty; and when it is a case of the strong against the weak, Nature's indifference to suffering ensures high living for the strong. Sparrow-hawks, for instance, feed their young during the first fortnight on the tiniest shreds of flesh, torn from the breasts of their victims; then carrying away the carcase, either devour it themselves, or leave it to decay. One pair I photographed had a regular larder on a large branch of an oak-tree. There was a depression in this near the trunk, which in time became a perfect charnel-house. Young birds ready plucked would lie there for several days, some of which were untouched; while dainty morsels had been torn from others and given to the

¹ *British Birds*, vol. iv. p. 79.

² *Birds of Great Britain*, vol. ii.

young hawks. So perhaps the shrike may occasionally pick and choose, whereas in times of scarcity, or when the young become clamorous, he will be forced to clean out his larder and start afresh.

The courtship of the shrikes has been graphically described by Mr. Kearton as follows:—"One morning I watched a pair of red-backed-shrikes sweethearting, and the antics of the male were both amusing and interesting. He flew up into a tolerably high oak and began to shake his wings, which he allowed to droop loosely by his side, as if he were stricken with palsy. The female followed, and, perching close beside her lord and master, listened attentively to some poor attempts at a warbling kind of song, which was accompanied by an awkward sort of dance. When this entertainment had lasted for half a minute or so, the gay Lothario flung himself headlong from his perch and sailed through the air with outstretched wings to another coign of vantage, evidently for the express purpose of showing off the richly coloured plumage of his upper parts. He then began to quiver his drooping wings all over again, and if his companion did not immediately join him he returned to fetch her. Once or twice he flew down to the ground, and picking up a dainty morsel of food, flew back and gave it to his sweetheart in the most gallant manner. During their love-making they wandered along a hedgerow close past me, as I stood perfectly still with my back against a big tree. They had not got far past, when they accidentally stumbled upon a blackbird's nest, containing young ones, and were promptly mobbed by its owners, who "spink, spink, spinked" just as loudly and angrily as if a cat had intruded itself upon them and their offspring."¹

The redbacked-shrike returns to its old nesting-site year after year if unmolested. The Duchess of Bedford mentions a bird of this species with an injured foot, which returned three years in succession to the same bush.² In a certain well-protected garden, for five or six years in succession, I was always certain of finding a nest in a clump

¹ *Wild Life at Home*, p. 53.

² *British Birds*, vol. iii. p. 160.

of evergreens. But owing to the male bird's boldness the nest is very easily betrayed, and the eggs, of which several beautiful varieties exist, fall therefore only too easily into the hands of the marauder.

The nest, which is usually placed in some dense hedge or bush, is a large loose structure composed of dry grass-stalks and fibrous roots, with an admixture of moss, and sparingly lined with hair. It is largely disproportioned to the size of the bird. Both sexes share in the task of building; but the incubating is, I believe, chiefly done by the female, while her mate mounts guard, and this is why it is an easy nest to mark down; for the male is such a conspicuous object, and so full of wrath, that he rather courts attention than otherwise. If he were less truculent, his well-concealed home would more frequently escape detection.

His alarm-note is an angry "chack," which sometimes changes to a note resembling the chirp of a house-sparrow. But when he thinks no one is listening, he pours into the ears of his mate a series of warbling notes which might be deemed a song; while both birds have an extraordinary range of expression, and commune together more after the manner of turtle-doves when discussing their young. I could not have believed that the ordinary raucous voice of the shrike was capable of such exquisite modulations, had I not unexpectedly lifted the veil of their inner life and surprised these reserved and apparently harsh-natured birds, while they were enacting a domestic drama that was almost human in its dénouement.

I was hidden within three feet of a nest which contained four young. The parents either visited the nest together, or followed each other in quick succession; but the male usually fed the brood from the right side and the female from the left. On one occasion, while the female lingered watching her family with an admiring eye, the male arrived with the head of a nestling bird, which he proceeded to push down the throat of one little shrike, with the result that it was almost choked. He then tried all four in turn, waxing more and more persistent at each failure. Meanwhile the hen bird carried on a

gentle conversation with him, the gist of which was quite obvious to the onlooker, although it is impossible to describe the variety of sounds produced. After having patiently watched, while each of her youngsters in turn was left gasping by her mate's well-meant but mis-directed efforts, she gently edged round to where he stood looking helpless and foolish, holding the rejected food in his own bill. She quietly took the mangled head from him, tore it into four pieces, and gave one to each of her brood in turn. Then the old birds looked at one another, interchanged a few remarks on the subject of infantile diet and the proper way of administering it, and finally flew amicably away together.

The newly hatched young are more lacking in beauty than is the case even with most nestlings. They are covered with coarse yellow skin, which is rough and corrugated, for the outlines of the feather-tracts are quite visible on the first day, and there is an entire absence of nestling down. But growth is rapid, and in eight days the latent beauty of the race begins to show itself in a delicately pencilled plumage, which closely resembles that of the female.

When fledged, no birds make such a continuous uproar in the garden as does a family of young shrikes; one cannot possibly sleep in their vicinity after dawn. With the first streak of daylight, the loud and continuous "chack" will be heard from four or five different directions, for they do not huddle together in one place like many other young birds, but spread themselves over a considerable area, and continually shriek for food. The parents have a busy time for some hours, for young shrikes seem particularly voracious, and perhaps this fact may account for the butcher-bird's larder. It is not improbable that while the young are digesting a meal, the old birds still continue foraging, and impale their quarry during these intervals of comparative leisure, so as to have a supply close at hand when necessary.

It is well worth while losing a few hours of sleep in order to watch these bold marauders supplying the needs of their well-grown and

clamorous family. But there must be an entire absence of self-consciousness both on the part of parents and young; for if suspicious of human intrusion into their domestic affairs, the more retiring female drops down into cover with her little ones, though the male will still hold his ground, swishing his tail from side to side, and giving vent to angry jerky syllables. Meanwhile his mate gradually lures her brood to a distant place of safety, and when assured of this he rejoins her, the display of valour being merely put on to cover her retreat.

The food supplied to the young consists largely of beetles, honey-bees and humble-bees, together with grasshoppers and dragon-flies; at least, all the pellets cast up by the nestlings which I have examined consist principally of the undigested portions of insects. Nestlings examined by Mr. Newstead "had been fed extensively upon the rather rare redtailed humble-bee (*Bombus lapponicus*). The lower half of the nest was also lined with the remains of this bee. Two other species of humble-bee were found impaled in the immediate neighbourhood of the nest. Fledged young contained remains of burial-beetles (*Necrophorus truncator* and *N. mortuorum*)."¹ I think mice and birds are not a staple article of *nursery* diet, but rather the exception, although the adult birds themselves feed on these. Apparently shrikes do not rob nests in the immediate neighbourhood of their own, for although their first appearance in May will cause considerable uneasiness amongst smaller birds within their nesting area, yet some kind of compromise is arrived at. There seem to be curious points of honour in the animal world, for I have known a litter of young foxes brought up in a bank riddled with rabbit-holes, where both rabbits and foxes used the same main exit and entrance. At night the bark of the old dog-fox could be heard a long way off; and in the grey twilight of dawn or dusk I have seen him come creeping home with a rabbit which was evidently caught at least a quarter of a mile away, there being no other rabbit-warren nearer. The cubs played hide-and-seek round the only tree near their earth; while the tiny rabbits

¹ *Food of some British Birds*, p. 38.

gambolled freely, apparently unmolested. There are laws governing the relations of animals with one another of which the explanation is wholly beyond our limited knowledge.

Shrikes fight bravely in defence of their young, for they have all the dashing courage of freebooters. I was once aroused from sleep in the grey dawn of a June morning by a series of angry screeches; and, looking round, saw a huge powerful cat stalking sedately away from a bush which contained a nest of young shrikes. Her sedateness soon vanished. The adult birds swooped down upon her like miniature hawks, to the utter discomfiture of the cat, whose orderly retreat soon became a disgraceful rout; her pace gradually quickened into a run, which finally ended in a leap over the garden fence. The victors were not reassured for some time, but flew from bush to bush chattering and scolding, alert and vigilant; every moment swishing their tails to and fro in a way that is peculiar to shrikes, and closely resembling the manner in which their feline enemy also expresses emotion.

When fully fledged, old and young keep together in little family parties till August, when, as Doctor Ticehurst says,—“They work their way gradually to the south coast, whence they mostly depart before the end of the month, so that their stay in this country is shorter than almost any summer resident.”¹

THE GREAT GREY-SHRIKE

[F. C. R. JOURDAIN]

There is hardly a single country in Europe, Asia, North Africa, and North America, where some form or other of great grey-shrike is not known to occur, and it is not surprising to find that a species with so wide a distribution has become divided into many geographical races. But, unluckily for the systematist, there is an extraordinary amount of individual variation in what at first sight appears to furnish

¹ *Birds of Kent*, p. 120.

good characters, viz. the amount of black and white on the quill feathers of these birds, so that in spite of many attempts to reduce the synonymy of the group to something like order, opinions were much divided, and the group was in a great state of confusion until Dr. Hartert revised the whole of the Shrikes for his work on the Birds of the Palæarctic Region. With the help of the loan of the rich material in the St. Petersburg Museum, together with the fine series of skins in the British Museum and at Tring, he was able to bring order out of chaos, and now we have a really satisfactory account of the affinities of what was formerly one of the most unsatisfactory groups.

In the British Isles we have at present only positive records of one form of great grey-shrike, the well-known inhabitant of northern and middle Europe, *Lanius excubitor excubitor* Linnæus. (There are also two records of the south-western or Spanish form, *L. excubitor meridionalis* Temminck,¹ and one of the Algerian race, *L. excubitor algeriensis* Lesson,² but until the specimens have been critically re-examined and compared in the light of recent researches, it is impossible to accept them as authenticated.) As the breeding range of the race which visits us extends on the Continent from the north of Scandinavia and North Russia to the Pyrenees and Alps, there is no apparent reason why it should not breed with us, and, as a matter of fact, circumstantial accounts of the finding of the nest and eggs have appeared more than once (cf. *Ibis*, 1859, p. 331; *Birds of Wiltshire*, p. 120; and *Zoologist*, 1878, p. 56). Unfortunately these statements do not seem to have stood the test of investigation; while the remark of Willughby, made over two hundred years ago, that "it is found in the mountainous parts of the north of England, as for instance in the Peak of Derbyshire, where it is called *Wierangel*," though it may possibly refer to a resident race long since exterminated, is quite likely to be based on casual occurrences only. At

¹ See C. R. Bree, the *Field*, November 13, 1875; and J. H. Gurney, *Transactions Norf. and Norwich Nat. Soc.*, vol. viii. pt. iii. (1907). Cf. *British Birds*, vol. i. p. 124.

² See *Zoologist*, 1899, p. 126; *Transactions Norf. and Norwich Nat. Soc.*, viii. pt. iii. p. 353.

the present time it may be described as an autumn and winter visitor in small but varying numbers, arriving on our east coast in October, and leading an erratic and wandering life here during the winter months, returning to its northern breeding grounds in early spring. The late H. A. Macpherson, in an article in the *Zoologist*, 1891, p. 96, gives an analysis of eighty-nine definitely recorded occurrences between 1843 and 1882, from which it appears that while only one bird was recorded in September, seventeen were noted in October, twenty-six in November, fifteen in December, nine in January, eight in February, six in March and also in April, and only one in May. There are also a few instances on record where the bird has been seen here in late summer—*e.g.* Mr. G. Goddard's statement that six were seen together near Newbury on 5th August 1810 (*Zoologist*, 1880, p. 315). As pointed out by Mr. Macpherson, it is quite possible that this may have been a vagrant party from Holland, as the young from an early nest would be able to fly strongly by mid-June, and migrants visited Heligoland on 14th, 15th, and 16th August 1886, while a bird of the year, presumably from Scandinavia, reached Kilnsea on 26th August 1877.¹

An examination of a number of specimens from the British Isles reveals the fact that some show a distinct double white bar on the closed wing, while others have only a single bar. The first bar is due to the presence of white at the bases of the primary quills, while the second bar is only visible when the white extends to the bases of the secondaries also. Gould supposed the double bar to be characteristic of the male bird and the single bar of the female, and it is a curious fact that this is true in a majority of cases, but not all. Seebohm, in his usual positive way, declared that the single and double barred birds were representatives of two distinct geographical races, ascribing the former to Pallas's or the Siberian grey-shrike, *Lanius major* Pallas, and the latter to the European form, *L. excubitor* L., and making the Ural range the dividing line between the two races. Unfortunately

¹ *Birds of Yorkshire*, i. p. 189.

for the soundness of this theory, Professor R. Collett, in the *Ibis* for 1886, pp. 30-40, has shown by indisputable evidence that even in Central European birds the second bar is occasionally imperfect or wanting, while in Scandinavia such cases are more common, and that in the same brood typical specimens of both forms may frequently be found. It is therefore impossible to regard this character as having a geographical significance; and Dr. Hartert's researches have shown that the European bird, with either single or double wing-bar, ranges east to the lower Ob, while the true Siberian form, a whiter bird, which never shows the second bar, probably extends from Kamtschatka to the Yenesei valley, and has never been recorded from the British Isles.

To see the great grey-shrike in England, the best way is to walk along the coast of Holderness towards the Spurn after a rush of migrants in October, or to wander along the Lincolnshire coast south of the Humber, with its miles of interminable mud flats reaching as far as the eye can see, though here it occurs less frequently. Yet another likely spot is the North Norfolk coast—a favourite landfall of our autumn immigrants. But the grey-shrike is never really a common bird even here. In the autumn of 1880 considerable numbers reached our shores, and in October 1892 Messrs Hewetson and Clubley saw no fewer than twenty birds in one day's walk between Kilnsea and Spurn, and next day Mr. J. Cordeaux saw seven or eight; but even this is quite exceptional, and compares poorly with the "tens of thousands" and "myriads" which one reads about in connection with the commoner migrants.

Mr. Cordeaux gives a vivid description of how, on 16th October 1892, every bush along the shore was filled with recently arrived small birds, chiefly goldcrests. The shrikes were hard at work restoring their energies by preying on their travelling companions. Each bird worked independently. One was trying to circumvent a goldcrest which had taken refuge in a blackthorn bush; another was hovering, kestrel-like, over a stubble field, often changing position from place

to place; while others were on the wing or perched on the highest twigs in hedgerows; one on a telegraph wire. "A handsome male strove hard to catch a robin, both chaser and chased threading their way through several clumps of broom and gorse; finally the robin got into an elder bush, and the shrike just above him ready to seize; luckily for the intended victim, he managed to drop into a hole in some loose rock-work. The shrike watched the spot, his head on one side, most intently, like a cat; but after a time gave it up, perching on the handle of a spade, from which point of vantage he speedily pounced on a goldcrest, seizing it by the nape, and the last I saw of him was trying to fasten it on the spikes of a wire fence."¹

Mr. Cordeaux goes on to point out a remarkable fact, which has been commented on by several writers, that in spite of the destruction wrought by the shrikes among the smaller birds, they showed no dread of them, and appeared to regard them more as privileged guests than as deadly foes—in singular contrast to the commotion caused by the appearance of a hawk among them.

When rested and refreshed after their journey, each shrike makes its way inland. Most of those which visit us appear to be immature, and lead a solitary, wandering life during the winter, seldom staying for more than a day or so in any one place. They rarely penetrate into the western counties, and generally leave our shores early in the spring. Six were seen near the Spurn Lighthouse on 17th February 1881, which must have been about to cross the North Sea (*Birds of Yorkshire*, i. p. 139), but individuals have been met with as late as April and even early in May, though the majority have disappeared by the end of March. So much for the great grey-shrike as a British bird.

To know the bird thoroughly one must follow it up into its breeding haunts. Probably all, or nearly all, those which visit us have their home in the north of Europe, and are regular migrants, moving southward every year in October to milder climates, and returning

¹ *Naturalist*, 1893, p. 11.

Plate 69

Great grey-shrike (male) with goldcrested-
wren impaled upon a thorn

By A. W. Seaby



again in early spring. But in many parts of middle Europe it may be described as a resident, although leading a vagrant existence after the breeding season is over until March, when it returns to its nesting place. It cannot be called plentiful anywhere, and is generally found in isolated pairs, each having its own district, often a considerable distance apart. Treeless plains, marshes, and deep forest are all unsuited to its habits, but it affects the outskirts of woods, orchards, heaths with broken clumps of trees, parks, and bush-grown commons, and in such places several pairs may be found within a radius of a mile or two, while in the mountainous districts of middle Europe it may be met with up to over 5500 feet. Still there are many districts of France and Germany which appear well suited to it, where it is nevertheless unknown as a breeding species. In the more favoured spots, such as the heaths of North Brabant, the Rhine valley, near Trier, and parts of Lothringen and the Eifel, it is no unusual sight to detect the male in the distance, perched high up on some twig which gives a good view of the country round. In North Brabant, where the trees are not allowed to grow to any height, an occasional cock bird shows up against the sky-line, too far off for the colours to be distinguished, but easily recognisable as he occasionally takes a short flight, settling again with a curious balancing movement of the tail, which at once suggests the characteristic habit of the blackbird. But he well deserves his name of sentinel, for as we attempt to make a closer acquaintance, he is at once on the alert and drops from his perch, to reappear on another small pine top some distance away. This dropping from the perch, flying low and rising again to a second station, is very characteristic of the shorter flights of this species. On longer flights it can cover considerable distances at a good speed, but never gives the impression of being a strong flyer, continually rising and falling in a way that partly recalls the action of the green woodpecker. When we are lucky enough to see him at close quarters against the background of dark pine leaves, his plumage suggests the brightly contrasted livery of the magpie, although in winter, when

broad patches of snow lie on the ground, it recalls the dingier colouring of the hooded crow on a small scale.

The courting display of the male is difficult to watch, on account of the shy and wary character of the birds. His general demeanour, however, undergoes a complete change. Instead of perching for long periods together on the tree tops, in the attitude which was up till now characteristic of him, with upraised breast, loose plumage, and tail inclined upwards at a wide angle, he becomes more restless and uneasy, and frequently utters the pairing cry, "*dweet—dweet*," which is responded to by the hen with a softer "*guet—guet*." At these times the body is held very erect, the feathers are tightly compressed, and the tail kept close to the branch on which he sits, so that the bird is scarcely recognisable at first sight. The two sexes are now seldom to be found far apart, and are generally to be seen near the nesting-place after the beginning of March.¹

As these shrikes pair for life, the same breeding-places are resorted to year after year when undisturbed, and where they are sedentary, as in South Germany, they may be found throughout the year within a mile of this spot. The cock has generally one or two favourite perches close at hand, where he not only watches for possible victims, but also keeps a sharp look-out for any marauding magpie, jay, crow, or bird of prey, such as kestrel, or even buzzard or kite. Should any of these appear, he dashes off in pursuit with harsh cries of "*schack, schack*," aided when necessary by his mate if she is not already incubating, and generally succeeds in driving off the intruder. But, according to German writers, the loud cries of the shrike sometimes lead to his own undoing, for a passing goshawk or even sparrowhawk may come up, attracted by the noise, and without ceremony strike and carry off the bold defender.

In addition to the warning-note and the call-note (which Naumann writes as "*Truuue*"), the shrike has quite a pleasing little song, consisting partly of imitations of other birds' notes, introduced,

¹ Dr. Burstert, *Ornithologische Monatsschrift*, 1807, p. 240.

as Naumann says, in the most amusing way, and partly of warbling notes of his own, together with the ordinary call-note. This song has been heard as early as 6th December in England,¹ but is generally most in evidence during fine weather in early spring; and apparently the hen also shares in this accomplishment, but sings less continuously.

Nest building begins in the second half of March in the south, and rather later in Central Europe, while in the Arctic Circle the season is quite a month later. Dr. Burstert quotes some interesting cases in which the nest was actually built on the very same branch for some years in succession. The site chosen naturally varies to some extent, according to the district in which it is found. In Germany it is frequently found on the side branches of large oak or fruit trees, generally at a good height from the ground, about 30 to 40 feet or even more. But even here it is occasionally to be found much lower, and has on several occasions been met with in thorn bushes only a few feet from the ground. Where the timber is small and not allowed to attain any great size, it is perforce obliged to nest lower down, as in Brabant, where it may be found breeding in the clumps of pines on the heaths. In Northern Scandinavia, too, the slender birch-trees on which it breeds are often quite small and stunted. Carl Sachse's observations show that while both sexes bring material, the actual building is done by the hen alone. The nest is bulky for the size of the bird—the foundation consisting of stout twigs, and the upper part of stalks, heather twigs, roots, etc. The inner cup, which is somewhat deep, is warmly lined with feathers, and also sometimes wool and hair.

It is interesting to note the different species of birds which have been laid under contribution: in Holland I have seen the feathers of redlegged-partridge, garganey, mallard, and blacktailed-godwit in one nest; in Lapland and Norway the feathers of the willow-grouse are generally used; but on the edge of the forests on the Muonio

¹ *Zoologist*, 1880, p. 70.

River, Sutton Davies found chiefly capercaillie feathers ; and Macpherson found those of the pheasant and buzzard in the Rhine valley.

When Seebohm visited Valkenswaard in 1880 he failed to find a shrike's nest till 19th May, in spite of the fact that nearly all the village boys were on the look-out for nests on his behalf, and in his work on *British Birds* (i. p. 601) he remarks that the great grey-shrike appears to be an exception to the rule that residents are early breeders here. But he failed to take into account the fact that the eggs have a marketable value, of which the Dutch boys were well aware, so that all the nests found by his emissaries between May 19 and 27 were really second layings of birds which had already been robbed of one clutch before his arrival. The true laying time is in April in Central Europe, varying from about the second week in South Germany to the end of the month in the north, but eggs may often be found quite fresh in May when earlier layings have been destroyed. In the high north, of course, the season is naturally later, and eggs have been found slightly incubated in June.

The number of eggs in northern latitudes appears to be rather larger than farther south : for clutches of eight have only been rarely recorded from Germany, and the normal set may be said to range from five to six, occasionally seven. But on the Muonio River Messrs. Stares and Davies found a nest with nine eggs,¹ and sets of seven appear to be not uncommon. The eggs have already been described, and it only remains to say that the hen sits closely and leaves the nest unwillingly. Though only a single brood is reared as a rule, there is no doubt that a second is occasionally reared. Thus Carl Sachse states that from one pair whose first brood had been successfully hatched off, his brother took a clutch of four fresh eggs on June 17. Probably many such nests escape notice in the thick foliage of late summer.

The food of the species consists of insects of various kinds, including beetles, wasps, grasshoppers, moths, and caterpillars, as well

¹ *Ibis*, 1905, p. 72.

as small frogs, blindworms, lizards, birds of many species, and field-mice. Like other shrikes, this species has two or three recognised "larders," generally thorn bushes, where it impales its prey, principally, no doubt, for convenience in eating it. In many cases small birds are decapitated first and the head swallowed whole, but it has been seen picking beetles to pieces by holding them in one foot, resting on the other as well as on the tarsus of the engaged foot. During the spring it frequently takes young birds from the nest, hunting partly by ear as well as by eye. A long list might be compiled of birds which it has been seen to attack and kill, principally the smaller species, such as goldcrests, wrens, redbreasts, buntings, tits, finches, larks, etc., but, according to Lord Lilford, it has also been known to take the lesser spotted-woodpecker; and occasionally, when pressed by hunger, has boldly attacked blackbirds, thrushes, and fieldfares, approaching from behind with a sudden swerve, and despatching them with blows from its strong bill.¹ The indigestible parts are thrown up in the form of pellets.

The young are assiduously fed on a varied diet by both parents, and remain with them for some weeks after they have flown. Macpherson says that the old birds forage for them long after they are able to fly,² and this is confirmed by Naumann, who states that the young are fed when they are so large as to be almost indistinguishable from their parents.

A characteristic which appears to have been first noted by Mejer (*Journal für Ornithologie*, 1887, p. 205) is the fondness of this species for bathing early in the morning. After the first dip, he retires to some elevated spot, gives himself a good shake, and often returns to his bath, afterwards resorting to some tree top, where he dries his plumage in the morning sun.

Taken from the nest, this shrike is readily tamed, and in Holland plays a curious part in the capture of passage-hawks (*Falco peregrinus*) on their autumn migration across the great heath of Valkenswaard.

¹ Cf. also "Classified Notes," p. 242.

² *Zoologist*, 1891, p. 99.

A shrike, or more frequently two, are pegged out on a spot which is commanded by the low hut wherein the falconer is concealed, and within reach of the birds is a refuge in the form of a turf hut. The keen eyes of the shrikes detect the approach of the falcon long before anything can be discerned by man's eye, and a long study of the actions and notes of the birds enable the falconer, unseeing and unseen, to judge accurately the position and movements of the falcon. At the right moment a decoy pigeon is allowed to make a short flight, and is kept within range of the clap-nets by means of string. The shrikes bolt into the turf hut for shelter, the falcon makes its stoop, and the falconer, warned of the approach of his prey, pulls the clap-net at the critical moment, and the peregrine finds itself a helpless prisoner.¹

¹ For a good illustrated account of the whole process see J. E. Harting, the *Field*, March 16, 1878 (p. 307).

THE FLYCATCHERS

[ORDER: *Passeriformes*. FAMILY: *Muscicapidæ*.]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON. E. L. TURNER]

SPOTTED-FLYCATCHER [*Muscicapa striata* (Pallas). *Muscicapa grisola*, Linnæus. Beam-, wall-, post-, rafter-, or bee-bird, wall-robin, wall-chat, cherry-sucker. French, *gobe-mouche gris*; German, *grauer Fliegenfänger* or *Fliegenschnapper*; Italian, *pigliamosche*].

1. **Description.**—The spotted-flycatcher may be distinguished by the ashy brown colour of the upper parts, marled by striations on the crown and fore-breast. The sexes are alike. (Pl. 70.) Length 5·8 in. (147 mm.). The upper parts are of an almost uniform ashy brown colour, paler on the head and rump, the former marked by dark brown striations. The wing-coverts are of the same general hue as the back, but the median and major coverts, like the secondaries, are margined with white. The under parts are white, tinged on the breast and flanks with isabelline white; the sides of the neck and fore-breast are relieved by more or less conspicuous striations of dark brown; the flanks are also, but very obscurely, striated. The juvenile plumage differs conspicuously from that of the adult in that the upper parts are mottled with white on the crown and buff on the back, while the under parts are white, dusky margins to the feathers giving a scale-like effect. Further, the wing and tail-coverts and the secondaries are tipped with buff. They may be distinguished from the young of the pied-flycatcher by the larger size of the spots on the back, and the absence of the white wing-patch.

2. **Distribution.**—During the summer months this species is distributed throughout Europe, except in the extreme north of Scandinavia and north of Archangel in Russia. Southward its breeding range extends to lat. 31° in Morocco and the district north of the Atlas range in Algeria and Tunisia. Corsican breeding birds have been recently described as sub-specifically distinct, and a somewhat paler

form inhabits Western Asia, from Palestine and Transcaspia east to Dauria and Afghanistan. In the British Isles it is very widely and generally distributed in Great Britain, but becomes scarce in North Scotland, and does not nest in the Outer Hebrides, though it breeds in Skye and some of the Inner Hebrides. It is also said to have nested in the Orkneys, but not in the Shetlands. In Ireland, although recorded as breeding in every county, it is somewhat local, and not particularly common. In winter it is found in tropical and Southern Africa, whither it migrates in autumn, passing southward through Arabia and Africa (both on the east and west sides). It has occasionally been found as far south as Cape Colony and Natal, but winters in greater numbers farther north. [F. C. R. J.]

3. Migration.—A summer visitor which is one of the latest of our summer guests to reach our shores, never doing so in any numbers until May has come. In fact, all April records may be looked upon as unusual, and records as early as April 9th (Yorkshire) and 10th (Unst, Shetland, 1906; also Devon, 1909; and Herts, 1909) are without parallel. The immigratory movement is at its height about mid-May, and dwindles away towards the end of the month. It appears to take place all along the south coast of England, but perhaps more markedly on the eastern half. Early in August the return movement sets in, and nearly all the birds have left us by the third week of September, although stragglers have been recorded as late as the middle of October (Cf. Saunders, *Ill. Man. B. B.*, 2nd ed., 1899, p. 157; Ussher and Warren, *B. of Ireland*, 1900, pp. 46, 47; Nelson, *B. of Yorks.*, 1907, p. 148; Ticehurst, *B. of Kent*, 1909, pp. 125-26; *B. O. C. Migration Reports*, ii. p. 115; iv. pp. 190-91; and v. p. 113; and T. E. Saxby, *Ann. Scot. Nat. Hist.*, 1907, p. 50). Whether any of the spotted-flycatchers recorded from the northern Scottish isles are birds of passage on their way to and from Northern Europe is doubtful. [A. L. T.]

4. Nest and Eggs.—In England the nest is very frequently built on houses or outbuildings and in gardens, although some nests are far from any human habitation. A very favourite site is on a projecting beam (whence it derives the name of "beam-bird"), while holes in brick walls, trellis-work, hinges of doors, and spouting are all utilised, and many nests are built in ivy, creepers, or wall fruit-trees. A more natural site is against the trunk of some old tree, or on a ledge of rock, while a good many instances are on record in which the nest has been built inside that of some other species. Many extraordinary cases of breeding inside cups, lanterns, or dead animals exposed on a keeper's gibbet, etc., may also be found recorded. The materials used are sometimes very scanty, and consist of



Photo by F. B. Kirkman

Spotted flycatcher's Nest under the thatch of a stack



Photo by Jasper Atkinson

Spotted flycatcher's Nest in an old cap



Photo by F. B. Kirkman

Spotted flycatcher's Nest in the fork of a tree

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moss mixed with roots and bents, cobwebs, and sometimes bits of bark and lichens, while the lining consists of hair, wool, etc., and sometimes a few feathers. (Pl. XXIX.) It is usual to find a site occupied year after year, but hardly ever twice in a season. Both sexes take part in building. Eggs generally 4-5, rarely 6 in number; ground colour generally with a tinge of bluish green at first, which often fades to yellowish white, sometimes closely freckled with reddish brown and at other times boldly blotched with chestnut and underlying purplish brown. Occasionally a set may be found with a blue ground and devoid of markings, presenting an interesting approach to the eggs of the pied-flycatcher. (Pl. D.) Average size of 100 eggs, $\cdot 72 \times \cdot 54$ in. [$18\cdot 3 \times 13\cdot 8$ mm.]. The eggs are usually laid in the last days of May or early in June. Incubation is performed by the hen alone, and lasts 14 days. Two broods are often, but not always, reared in the season. [F. C. R. J.]

5. Food.—Chiefly insects. The young are fed by both parents on insects, including many species of Diptera, which are often too minute to determine. [E. L. T.]

6. Song Period.—The few notes composing its so-called song may be heard irregularly during May and June. [E. L. T.]

PIED - FLYCATCHER [*Muscicapa atricapilla* Linnæus.¹ Coldfinch (obsolete). French, *gobe-mouche noir*; German, *trauer Fliegenfänger*; Italian, *balia nera*].

1. Description.—The adult male pied-flycatcher may be distinguished at a glance by the black upper parts relieved by a white bar across the forehead and a large white patch on the wing; the female by her olive-brown colour and a similar white patch on the wing. (Pl. 71.) Length 5 in. [127 mm.]. The male, in addition to the white on the forehead and wing, has the rump greyish, and more or less white along the outer web of the outer and penultimate tail feathers. In some individuals no white is present, in others the three outermost feathers may have a quite conspicuous amount of white. This is a variable character, not dependent on sex or age. The white on the wings increases with age. In fully mature birds, and in the extended wing, a white bar runs right across the bases of the primaries and secondaries, and extends down the outer vanes of the innermost secondaries. The major coverts of the secondaries, which are white, largely conceal the secondary area of the white bar, and in the closed wing the primary portion

¹ By the rule of strict priority the name should be *M. hypoleuca* Pallas (see Hartert, *Vog. Pal. Fauna*, p. xxxix).

of the bar appears as an isolated patch, bounding the tips of the primary major coverts; in young birds it is wanting altogether. The under parts are pure white. The female is olive-brown above, and lacks the white frontal bar; the throat and abdomen are white, the fore-neck, breast, and flanks olive-buff. The white patch on the primaries is present in fully mature birds. The juvenile plumage differs from that of the adult female in that the upper parts are mottled with white on the crown and buff on the back, while the under parts are white, the feathers of the fore-neck and fore-breast having dusky margins, giving a scale-like appearance. [W. P. P.]

2. Distribution.—On the Continent the breeding range of this species extends over the greater part of Europe, south of lat. 70° in Scandinavia, 65° in Finland, and about 57° in the Urals. (In Greece and the Caucasus it is replaced by another race, *M. atricapilla semitorquata*, which also breeds in Asia Minor and Persia, while the Algerian and Tunisian form has also been separated.) The southern limit extends to mid-Spain and Italy as well as the valley of the Lower Danube, but does not include Hungary or South Russia. In the British Isles it is local, and is chiefly found in Wales, in small numbers in Shropshire, commonly in the Lake district, the West Riding of Yorkshire, Durham, and Northumberland, but in parts of Merioneth and Lakeland is very plentiful in the wooded valleys. It also breeds in Scotland, south of the Firths of Forth and Clyde, in small numbers, and occasionally perhaps as far as the Moray basin. It does not nest in Ireland. Sporadic instances of breeding in many of the midland and southern counties of England are on record, but can only be regarded as exceptional, and require thorough investigation. During the winter months it is found in Africa, migrating south along the west side to the Canaries, the Gold Coast, and the Congo, while on the east side it is found in the Nile valley. [F. C. R. J.]

3. Migration.—A regular summer visitor, and an uncommon bird of passage. As the breeding distribution of the summer visitant individuals is very local, they naturally occur only as birds of passage in many districts. Quite apart from this, there is a regular passage through the more easterly parts of our area, of birds which summer in Northern Europe. To Ireland, which is quite outside the breeding area, the pied-flycatcher is only an occasional migrant. The first spring immigrants reach England about mid-April, and the movement becomes general a week or so later, lasting till about the middle of May: it is in the first week of the latter month that the passage is usually noticed on the east coast and the northern isles. Emigration sets in late in August and continues through September: a pied-flycatcher has

been taken at Trevoze Head Lighthouse (Cornwall) as late as 16th October (1908). The directions of these immigrations and emigrations have not yet been ascertained, chiefly owing to the paucity of records obtainable for so comparatively uncommon a species (Cf. Saunders, *Ill. Man. B. B.*, 2nd ed., 1899, p. 159; Ussher and Warren, *B. of Ireland*, 1900, p. 47; Witherby and Ticehurst, *British Birds*, i. p. 148; Nelson, *B. of Yorks.*, 1907, pp. 149-152; Ticehurst, *B. of Kent*, 1909, pp. 126-130; *Seventh Brit. Assoc. Migration Report*, p. 43; *Fifth B. O. C. Migration Report*, pp. 117, 249, 250, etc.). On Heligoland the spring passage may continue from the last week of April till the first week of July. Young birds begin to pass in the first week of August, and the autumn movement continues till late in September (cf. Gätke, *Vogelwarte Helgoland*, Eng. trans., 1895, pp. 222-223). On its British migrations this species is met with singly, in pairs, or very small parties (cf. Ticehurst, *loc. cit.*). [A. L. T.]

4. Nest and Eggs.—Generally found in a hole of some kind in well-wooded country, and not far from running water. Any natural hole in a tree may be utilised, or a hollow in a rotten stump, sometimes only a foot or so above the ground, while on other occasions it is as much as 20 to 30 feet from it. Old woodpeckers' holes are often used, as well as crevices in stonework of buildings. A breeding-place is often occupied year after year. The materials used are dead leaves, with bents, moss, and bits of honeysuckle bark, lined with grasses and roots, and occasionally hair, feathers, or wool. Whether the cock assists in building appears not to be recorded. The eggs are usually 6 or 7, sometimes 8 or 9, very pale blue in colour, thin shelled and transparent looking. Varieties in which fine red spots are found have occasionally been found. (Plate D.) Average size of 100 eggs, $\cdot 68 \times \cdot 52$ in. [$17\cdot 36 \times 13\cdot 4$ mm.]. The eggs may be found by mid-May, but generally towards the end of the month or early in June. Incubation lasts about a fortnight, and is usually carried on by the hen bird who sits extremely closely. Only one brood is reared in the season. [F. C. R. J.]

5. Food.—Insects and their larvæ. In autumn wild berries (Bailly). The young are fed by both parents entirely on insects and their larvæ. [E. L. T.]

6. Song Period.—From its arrival in April till about the middle of June. [E. L. T.]

The following species are described in the supplementary chapter on "Rare Birds" :—

Red-breasted Flycatcher, *Múscicapa parva* Bechstein.

Brown Flycatcher, *Múscicapa latirostris* Raffles. [F. C. R. J.]

THE SPOTTED-FLYCATCHER

[E. L. TURNER]

The spotted-flycatcher is amongst the last of our summer migrants to arrive, but one of the commonest and most evenly distributed throughout Great Britain. Owing to its unobtrusive and confiding habits, sober garments, and lack of musical talent, it is well established in our woods, orchards, and gardens almost before we are aware of its presence. Many writers speak of it as the "mute" bird, and indeed the few notes it utters scarcely attain the dignity of a song, and are heard only at rare intervals; but although nature has withheld from this bird much that is superficially attractive, she has, by way of compensation, endowed it with poetry of motion. One moment it may be seen perched on a post, inert, silent, and pensive, its whole attitude suggestive of languorous indifference to the affairs of life; but an instant later it will dart with lightning-like rapidity on its prey, gyrating in mid-air for a second before returning to its perch with the captured insect, where it immediately resumes its former apparently listless attitude. There is, however, a suggestion of latent energy about the flycatcher's seeming inertia; the keen watchful eye, slender, rapier-like bill, and slightly drooped tail, suggest the momentary pause of a skilled fencer before he makes his fatal thrust. Any one who is not deaf may hear the snap of the flycatcher's beak as it closes upon an insect, the escape of which is rendered almost impossible by the strong hairs surrounding the bird's gape. These hairs are common to many insectivorous birds, and are said "to act like the backward bent teeth of pike in preventing the escape of the prey."¹

As the spotted-flycatcher is a late arrival, very little time seems to be spent in preliminaries, and of its courtship nothing seems to be

¹ Warde Fowler, *A Year with the Birds*, p. 134.

known. The nest is begun almost at once. Yarrell says: "There is very good reason for believing that the same pair of birds return to occupy the same spot for several years in succession."¹ At any rate, they are very faithful to their old nesting-places, returning to them again and again if unmolested. Gilbert White frequently stated that they came back every year to the vines on his house.

In their choice of a site they are almost as fond of variety as the robin. The nest is usually placed in the thicker branches of a creeper against a building, or in the fork of a tree; but frequently on a ledge of rock or a beam, or amongst the smaller twigs which grow out of a tree trunk. I have also seen it in the inverted half of a cocoanut and on a window ledge. It has been known to nest in holes in walls and lamp-posts, and frequently appropriates the vacated dwellings of other birds, especially those of the greenfinch and thrush.² On August 2, 1908, I photographed a pair of flycatchers feeding young in a disused chaffinch's nest, which had simply been spring-cleaned and lined afresh. On July 25, 1910, I photographed another nest inside that of a thrush. In this instance the flycatchers had built a complete nest of their own within the larger structure, so that when brooding the hen bird was almost hidden by the walls of the thrush's nest, which surrounded her own like an earthwork. When alarmed she erected the spotted feathers of her crown, and raised herself in the nest so that her speckled breast came into view. She looked like a pigmy thrush in a home that was much too large for its occupier.

As far as my own experience goes, when a pair of flycatchers appropriate another bird's nest, they always do so late in the season. It may be that an accident has befallen their original home, so that in order to economise time they simply annex another bird's dwelling.

It is very difficult to say whether or not both sexes take part in the building of their neatly constructed nest, as they are exactly

¹ Yarrell, vol. i. p. 321.

² Mr. Farren tells me that—"Every year from 1904 to 1909 inclusive there was a nest in a hole in a small plum-tree, although on only two occasions, 1904 and 1906, was a family successfully reared."

alike; but the general opinion seems to be that the female alone undertakes this work, as well as the incubating; both birds, however, share in feeding the young. A pair I once photographed, which nested in the fork of an apple-tree, were easily distinguishable, because the one I took to be the female from her feminine behaviour had lost a tuft of feathers from her neck; she was also generally dishevelled in appearance, as from long brooding, whereas her mate was neat and trim. Both were equally diligent in feeding their newly fledged offspring.

The young hatched out in the thrushes' nest were brooded over entirely by the mother for three or four days, and all the food was brought by the male. On his approach the hen put on a most sentimental expression, turned her head from side to side in a languishing manner, shivered her wings rapidly all the time, and uttered a very faint sound, or, as Gilbert White describes it, "a little inward wailing note."¹ She would then raise herself in the nest, and gently stir up the young to that attitude of expectancy all other nestlings I have ever observed assume by instinct on the slightest sounds indicating the presence of their parents; then she took the food from her mate, and administered it to the young herself; after which they immediately settled down to their former state of apathy. The whole process was curiously silent, and remained so even later on, when the young ones were well grown. But then adult flycatchers are singularly self-contained, and behave in the most dignified fashion under circumstances which call forth torrents of invective from such birds as tits and starlings, or indeed from any of the smaller birds into whose domain I have intruded. Somehow this meekness wins in the end, for the spotted-flycatcher manages to hold its own without ostentation or fuss of any kind. It is, moreover, one of the best friends of the agriculturalist. Its fearlessness and friendliness are always attractive, and few birds are so suggestive of summer sunshine as the sober-coloured, graceful flycatcher perched on a tennis-net, hawking for

¹ Letter to Pennant, Sept. 2, 1774.

Plate 70

Spotted-flycatcher enticing its young to fly

By A. W. Seaby



flies. Maybe it appeals to me personally, from the fact that it is the first bird I ever photographed.

In Kent the spotted-flycatcher is called the "post-bird," from its love of perching on posts of all kinds. In the woodlands it may be frequently overlooked, for there its nest will be better concealed, and the bird's little grey-brown form does not at any time court attention. How confiding it is may be judged from the fact that it is one of the few migratory species whose nests may be found in our London parks and gardens. Gould mentions a nest with five partially incubated eggs which was taken from a lamp-post in Portland Place.¹

A striking example of the persistence of the spotted-flycatcher in returning to its nesting-place is related by Mr. Gurney, as follows:—"About the end of June a spotted-flycatcher began to build a nest over the door of the lodge at the entrance of my grounds. The woman who lives in the lodge, not wishing the bird to build there, destroyed the commencement of the nest; every day for a week the bird placed new materials on the same ledge over the door, and every day the woman removed them, and at the end of a week placed a stone on the ledge, which effectually baffled the flycatcher's efforts at that spot; but the bird then began building at the latter end of the ledge, from whence it was also driven, and three stones being then placed on the ledge, the bird relinquished the attempt to build at either end of it, and commenced building a nest on a beech-tree opposite, which it completed, and laid two eggs in it. When the bird was thus apparently established in the beech-tree, the stones over the door were taken away, when the flycatcher immediately forsook its nest and eggs in the beech, and again commenced building over the door on the part of the projecting ledge which it had first chosen. The nest was again destroyed and two slates placed over the spot: the birds contrived to throw down one of the slates from a slanting to a horizontal position, and then began to build upon it. The nest was again destroyed, and the three stones replaced and kept there for a fortnight, after which

¹ *Birds of Great Britain.*

they were again removed, and directly they were taken away the bird again began building. The nest was subsequently destroyed several times in succession. The bird was twice driven away by a towel being thrown at it; a stone wrapped in white paper was placed on the ledge to intimidate it, but the flycatcher still persevered, completed a nest, and laid an egg. On hearing the circumstances, I directed that the persecution of the poor bird should cease, after which it laid two more eggs, hatched all three, and successfully brought off its brood.”¹

Gilbert White relates a rather extraordinary story illustrating the sagacity with which a pair of flycatchers atoned for an error of judgment on their part: “A pair of these little birds had one year inadvertently placed their nest on a naked bough, perhaps in a shady time, not being aware of the inconvenience that followed. But a hot sunny season coming on before the brood was half-fledged, the reflection of the wall became insupportable, and must have inevitably destroyed the tender young, had not affection suggested an expedient, and prompted the parent birds to hover over the nest all the hotter hours, while with wings expanded, and mouths gaping for breath, they screened off the heat from their suffering offspring.”²

The food of the adult birds seems to consist almost exclusively of winged insects. I have not seen the nestlings supplied with larvæ of any kind, neither have I seen the parents searching for food on the ground. Yarrell says they have been known to feed on berries of the mountain ash in autumn.³

The nestlings, in addition to winged insects, are fed on spiders and aphides, but often the food supplied is too minute for identification. Gould estimated the weight of five fully-fledged flycatchers as 1200 grains, and remarks: “As their sole food had been insects, what a vast number must have been destroyed by the parents for the support of themselves and their brood in the short space of twelve days.”⁴

¹ Stevenson's *Birds of Norfolk*, vol. i. p. 65.

² *Natural History of Selborne* (Grant Allen), p. 208.

³ Yarrell, vol. i. p. 222; H. Saunders, *Manual*, p. 158.

⁴ *Birds of Great Britain*.

An interesting case of dual nesting has recently come under my notice. A spotted-flycatcher began to build on a ledge outside a bedroom window, where it was closely watched by an invalid friend of mine. When the nest was about half finished, a pied-wagtail began to bring material too, and from that time until the nest was completed, both species took turn in its construction. Then the flycatcher laid an egg, and the next day the wagtail followed suit, so they continued alternately until each bird had laid her full clutch. But the flycatcher alone brooded, while the wagtail contented herself with running to and fro on the ledge, keeping an eye on the sitting bird, and frequently twittering to her. The patient flycatcher continued to do double duty until a day or two before incubation was nearly complete, when she suddenly ejected the wagtail's eggs, but successfully hatched out her own. The wagtail soon found her smashed eggs upon the carriage drive, and displayed considerable anxiety over their destruction, but very soon commenced building another nest on the same ledge, and touching that of her neighbour. Eventually she, too, successfully hatched out her brood.

Such a curious story as this makes one wonder whether the parasitic cuckoo takes an intelligent interest in the ultimate fate of her eggs and young. Also, whether in far-away times certain species like this flycatcher refused to become foster-parents, and are in consequence still immune from this particular form of persecution.

THE PIED-FLYCATCHER

[E. L. TURNER]

The pied-flycatcher differs greatly in certain particulars from the spotted. In the first place, it is extremely local in its distribution, being confined almost entirely to mountainous valleys in the northern counties and in Wales. It seldom nests far from streams, and prefers a combination of woodland and water. But like the spotted-flycatcher

and most other species, it is very faithful to its old habitat, and on migration hurries over large tracts of country which appear to be equally suitable as breeding-places, in order that it may reach its ancestral summer home.

Though a much greater lover of the wild than its relative, nevertheless the pied-flycatcher may be attracted to gardens and induced to inhabit nesting-boxes; while a pair has been recorded by Mr. Oxley Grabham as nesting "within the boundaries of the city of York; and another pair brought off their young in the heart of Scarborough."¹

This species is one of the most charming and attractive of our summer migrants. The cock birds arrive some days before the hens, and spend the interval in practising their vivacious little song. The black and white plumage of the male renders him a conspicuous object; he is not at all shy, and seldom resents human intrusion, therefore it is always a pleasure to watch his sprightly ways; while his large brilliant eye gives him additional charm. He always looks keen and full of the joy of life; possessing also that well-groomed appearance which is common to all pied birds. When poised ready to make a fatal dash upon his prey, there is the little downward droop of the tail so characteristic of his soberer cousin, and the low crouching attitude common to both, which gives one the idea sometimes that flycatchers are very short in the leg. But no birds can look more alert and graceful when they choose; this crouching attitude is like the bending of a bow before the arrow is sped. Robins and some other birds which dart suddenly upon their prey often gather themselves together in the same way before the final spring and "throw off" with their feet.

In many of their habits pied-flycatchers closely resemble robins and redstarts, for while the spotted-flycatcher seldom if ever seeks its prey upon the ground, the pied frequently drops down from a considerable height, picks off an insect from the herbage, and retires with it to his former post. He is not quite so expert as his cousin in

¹ *Country Life*, p. 242, February 1910.

catching insects on the wing, neither does he return so regularly to the same perch.

The female is much more staid in demeanour and sober in appearance than her mate. The first time I ever saw a hen of this species was at Hickling, on 17th May. She looked a tired dull little bird, and was probably resting after migration; now and again she languidly picked insects from among the leaves of a small oak-tree, and was quite inconspicuous but for the peculiar white markings on the wings, which form a kind of V-shaped pattern across the otherwise dull brown plumage. I once saw a male about the beginning of May in the same neighbourhood. They formerly nested in the vicinity of Horsey Mere, but are now only seen on the east coast during migration.

The pied-flycatcher, unlike the spotted, has a spirited and inspiring song, which he utters on all possible occasions. In no point does he differ from his "mute" relative so absolutely as in the general liveliness of his disposition. This song has been described by Mr. E. A. Swainson as "resembling that of the redstart in duration and frequency of utterance, but it is shriller and not so loud, and in its pitch is nearer that of the hedge-sparrow; the first three or four notes resemble the spring song of the coal-tit. The passages which occur oftenest are—'*Tichee tichee, chuck chuck chee,*' and '*Cheety cheety cheety chee.*' The alarm-notes of the two sexes are quite distinct; that of the male consists of two distinct notes, like the '*tit a tit*' of the male redstart, while the note of the female is identical with the '*wit wit*' of the chaffinch."¹

On the advent of the hens the cocks vie with each other in vocal powers, and fight vigorously. During the period of courtship, and also when in full song, the emotion of the male bird shows itself in a curious swaying movement of the tail.—"They also search about for nesting-places, and when they have found a likely one, remain on guard and sing more than ever. If the particular bird that you happen to be watching is fortunate, you will presently find him beside

¹ *Zoologist*, 1893, p. 420.

himself with excitement and pride, as he introduces a mate to the home he has found. If the hen approves, the cock remains still in charge of the spot, for it may be some days yet before the hen begins to build.”¹

When the hens have chosen their mates, jealousy between the males seems to disappear. Mr. Walpole Bond says: “Many pairs will be found nesting in the same wood, in which case the birds (the males especially, when their busy partners are incubating) are often seen in little parties of from three to six. I have known over a dozen pairs breeding in one wood of no great extent.”² Mr. Macpherson relates an amusing instance of re-awakened jealousy on the part of a male:—“One afternoon in May I found a pair of pied-flycatchers and a single male flitting about the thorn bushes which overhang the river. The males sang cheerily, particularly the young one, and the old cock came and perched on a green spray just over my head, as I crouched all but motionless in the grass. Several sharp tussles occurred between the two males, while the paired female looked quietly on, admiring the prowess of her champion.”³

Unlike the spotted-flycatcher, this species always builds in holes, and where there happens to be a dearth of these, sharp contests often take place between redstarts, tits, and pied-flycatchers for possession of a coveted site. The hole selected is usually in the decayed stump of a tree, but sometimes in loose stone walls. Pollard-willows, birches, oaks, and hawthorns provide suitable accommodation; the height of the nesting-hole varies from close to the ground to about 10 or 12 feet up. Nests have been found considerably higher up, but these are rare.

Usually the whole of the building and incubating is done by the hen while her mate mounts guard, but as individual birds of all species vary in disposition, so occasionally the cock pied-flycatcher has been known to take his turn upon the eggs.⁴ Both nest and eggs are similar to those of the redstart, and as these two species arrive

¹ Granville Sharp, *Birds in a Garden*, p. 77.

³ *Fauna of Lakeland*, p. 125.

² *Country Life*, 1907, p. 679.

⁴ Bailly, *Ornithologie de la Savoie*, ii. 62.

Plate 71

Pied-flycatchers. The female is about to feed
the young, the male on the right looking on

By A. W. Seaby



together and resemble each other so closely in manner of life, it is not to be wondered at that frequent disputes arise between them, and that one ejects the other from his ancestral home. When this occurs, the victorious bird will sometimes incubate the evicted tenant's eggs with its own; and the well-known instance recorded by Mr. Heysham is a good illustration of this:—"On one occasion we found a dead female redstart in the nest of a pied-flycatcher containing two eggs; and at another time, when both species had nests within a few inches of each other, upon the redstart's being removed, the female redstart took possession of the flycatcher's nest, incubated the eggs, and brought up the young."¹

The male is diligent in his attention to the hen while she is sitting, and also takes his full share in feeding the young. Mr. Granville Sharp's notes on this point are again very interesting:—"When the hen begins to sit, the cock brings her food, but at first in an intermittent sort of way, allowing himself frequent absences—perhaps mindful of the rather dull sentry duty that he went through at the beginning. Meanwhile the hen often leaves the eggs for a little hawking. But soon she sits closely, and then the cock is very attentive, bringing her stores of caterpillars and insects. If she happens to be off the nest at any time when he comes, he flits in and out of the hole, using a querulous note that I have not otherwise heard. He then eats the insect he has brought, but waits wistfully near the nest till the hen returns."²

The food of the pied-flycatcher, while it is with us, consists almost entirely of insects and their larvæ, but in Savoy, during autumn, it feeds not only on insects, but also "on the fruits and berries of the elder, mulberry, and fig."³

Nestling birds are fed largely on caterpillars and beetles. When fully fledged, young birds closely resemble the females, but "in their change of plumage the males have all the intermediate shades from

¹ Gould, *Birds of Great Britain*.

² *Birds in a Garden*, p. 78.

³ Gould, *Birds of Great Britain*.

brown to black, which circumstance has probably occasioned the belief that the male changes his plumage and becomes like the female in winter."¹ Young and old keep together in family parties, but shift about from place to place, and when well on the wing they soon leave our shores. I have seen them on the east coast during the second week in September in company with wheatears, redstarts, and spotted-flycatchers—all waiting for a suitable moment to wing their way south. They are less vivacious then, in contemplation of their journey overseas, and family cares have toned down their exuberant spirits, so that in general demeanour they are more akin to their more serious relatives.

One is loath to part with either of the flycatchers, for the unobtrusive spotted is missed from the garden as only the quietly helpful are missed; while one sees all too little of the handsome, light-hearted pied, during the short six months of their stay, and would fain

“Bid them a moment linger,
Nor fly
Too soon from winter’s scowling eye.”

¹ Gould, *Birds of Great Britain*.

SWALLOWS AND MARTINS

[ORDER: *Passeriformes*. FAMILY: *Hirundinidæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. F. B. KIRKMAN. W. P. PYCRAFT. A. L. THOMSON]

SWALLOW [*Chelidon rústica* (Linnæus). *Hirúndo rústica*, Linnæus.
Chimney-swallow, barn- or house-swallow. French, *hirondelle de cheminée* ;
German, *Rauchschwalbe* ; Italian, *rondine*].

1. Description.—The swallow may be recognised at once by the steel-blue colour of the upper surface and the deeply forked tail, showing oval white spots when spread. (Pl. 73.) Length 7·5 in. [190 mm.]. In the adult male the metallic steel-blue of the upper parts is relieved by a chestnut-red band across the forehead and large oval white spots on the inner webs of the tail feathers, save only the central pair, which have no spots, and the outer pair, which are of great length, and have the spot drawn out to form a streak. The remiges and tail feathers differ from the rest of the colouring of the upper surface in being of a dull, dark metallic green. The throat, like the forehead, is of a dark chestnut-red, while across the fore-breast runs a band of dark steel-blue, sometimes tipped with chestnut. The rest of the under parts are of a rufous buff, save the under tail-coverts, which are pale chestnut. The female is duller, and has a shorter tail, the outer pair of feathers being much shorter ; the forehead has less chestnut, and the breast and abdomen are paler. The juvenile plumage differs from that of the adult in being much duller, the metallic lustre being but slightly developed. The outermost tail feathers do not project beyond the tips of the wings, and the red on the forehead is but feebly developed, while that on the throat is of a very pale chestnut. The band across the fore-breast is of a dusky hue, tinged with chestnut, and without lustre : the rest of the under parts are of a pinkish buff, darker on the under tail-coverts.

[W. P. P.]

2. Distribution.—The ordinary European swallow is found in the breeding season throughout Europe, except in the extreme north, beyond lat. 70° N., North-west Africa, and the greater part of Western Asia, but is replaced in North-east Africa, Palestine, Eastern Asia, and North America by other sub-specific forms. In the British Isles it is very generally distributed, but becomes scarcer in the north of Scotland, although it has been known to breed occasionally in the Orkneys and Shetlands. It is, however, only a straggler to the Outer Hebrides, but has once or twice bred on Barra and once on the Uists. During the winter months it is met with on migration over all Africa as far as Cape Colony, and in Asia to India and the Malay Peninsula, but does not winter north of the oases in the Sahara as a rule. [F. C. R. J.]

3. Migration.—A summer visitor and bird of passage. Dr. Hartert holds that “without doubt the most northerly dwellers migrate farthest south, while the breeding birds of the Atlas Mountain region probably go only to the oases of the Sahara to pass the winter” (*Vögel der palaäarktischen Fauna*, i. p. 801). The British migrations of the species have been very thoroughly studied, and this summary of the results is based principally on the special report on the swallow drawn up by Mr. W. Eagle Clarke for the Migration Committee of the British Association (*Brit. Assoc. Report*, 1901, pp. 372-76, being pp. 9-13 of the *Fourth Migration Report*). The different movements may be best treated separately.

(1) *Spring immigration of our summer resident birds.*—Swallows have been recorded as present in some numbers on the 21st of March (cf. Saunders, *Ill. Man. B. B.*, 2nd ed., 1899, p. 163), but it is usually only solitary birds that come to notice during that month. It is characteristic of the swallow, in fact, that the arrival of the “main body” is heralded by a few early individuals. The date of arrival, however, varies greatly in different parts of the country. “A careful analysis of dates shows that the average time of [the vanguard’s] appearance . . . is as follows: For South-western England, the beginning of the first week [of April]; for Ireland, the end of that week; for South-eastern England, early in the second week; for South-western Scotland, the end of the same; for South-eastern Scotland, the middle of the third week; for Northern Scotland, the fourth week; and lastly, it is not till the second week of May that the few swallows which resort to Orkney reach their destination. These early immigrants are either single birds or pairs. Some ten or twelve days later than the arrival in each case of this advanced guard takes place the appearance of swallows in some numbers, and they become gradually abundant throughout the kingdom. These initial hosts are followed by others,

and so the influx proceeds during the rest of April and the first half of May, and beyond that date in the case of birds of passage. In backward seasons, such as that of 1887 [and of 1908 (cf. Paterson, *Ann. Scot. Nat. Hist.*, 1909, p. 203)] . . . the vanguard may be delayed for about a week, but on that occasion its appearance was immediately followed by a 'rush,' and the birds became numerous and general only a little in arrear of their accustomed time" (*B. A. Report*, loc. cit.). It will be noticed from the above that the birds appear along the western seaboard of Great Britain earlier than on the eastern side at corresponding latitudes. This, among other points cited, has received further verification from the more recent labours of the Migration Committee of the British Ornithologists' Club (cf. *B. O. C. Migration Reports*, i.-v.), which places the swallow among the species which arrive along the whole south coast of England, "but first and chiefly on its western half."

(2) *Spring passage to Northern Europe*.—"This movement . . . does not set in till the last days of April, reaches its maximum about the middle of May, and may be prolonged till nearly the middle of June." A great part of the movement is therefore coincident with a great part of that just described, but it "is almost wholly confined to our eastern coast, and the North Sea is crossed ere the northern limit of the mainland is reached, for these travellers do not seem to take Orkney or Shetland on their route." During the first three weeks of May a slight passage is noted in the Outer Hebrides and on the north-west coast of Scotland: its objective might be either the Færoes or Northern Europe (cf. *B. A. Report*, loc. cit.).

[(3) *Spring passage to Central Europe*.—The purely hypothetical counterpart of " (6) " (*q.v.*.)]

(4) *Autumn emigration of our summer resident birds*.—Parties of swallows are frequently reported from the light-stations during July and early August, but these may well be "birds merely seeking better quarters within our area. It is not until the last week of August that swallows ordinarily begin to leave Scotland and the north of England. Then there is a decided movement southward . . . [but] there is no evidence that these birds actually quit the country, and most, if not all, probably tarry for some time in the south of England before crossing the Channel. The Irish movements in August are less pronounced. . . . In September the southern movement becomes general throughout the whole country, and reaches its maximum between the middle and end of the month. During its early days there is the first evidence of actual departure from our shores, and the cross-Channel emigration then commencing proceeds throughout the autumn. The beginning of October shows a decided falling off in the numbers departing from the northern

districts, especially in the west ; but the southward movement is well maintained during the first half of the month from the east and south-west of England and the south-east of Ireland. By the middle of the month the emigration from Scotland and the north of England is over. . . . After the middle of October a considerable diminution is observable except on the coast of the Channel, where the efflux is maintained throughout the month . . . [and where] many departures occur annually till the middle of [November], while stragglers are to be seen later, especially in the south-west." It may be mentioned that part at least of the Irish emigratory stream passes through the south-west of England, and the same is doubtless true of the corresponding spring movement (*B. A. Report*, loc. cit. ; cf. also *B. O. C. Migration Reports*, iv. pp. 191-2 ; and v. p. 250).

(5) *Autumn return passage from Northern Europe*.—This takes place along the east of Great Britain from mid-September onwards, but it is in great part scarcely distinguishable from the previous movement. To it are probably referable the late individuals so frequently recorded (even in early November) on our eastern seaboard. As in the corresponding spring movement, there is a slight passage through the Outer Hebrides, but no trace of any in Orkney and Shetland (cf. *B. A. Report*, loc. cit.).

(6) *Autumn return passage from Central Europe*.—This movement is a comparatively recent discovery. On 26th September and 14th October 1903, a strong migration was observed at the Kentish Knock Lightship, the direction being *westward*. Very little further information has been gathered (cf. Clarke, *Ibis*, 1904, pp. 123, 138, etc. ; and Ticehurst, *B. of Kent*, 1909, p. 132).

Swallows are occasionally recorded in December, and examples have been known to survive an exceptionally mild winter in this country (cf. Nelson, *B. of Yorks.*, 1907, p. 156 ; Beeston, *Zoologist*, 1907, pp. 227-34, 267-71, 303-6 ; and Harting, *Field*, 30th January 1892).

The swallow's migrations are mainly diurnal, but for a notable exceptional instance see *B. A. Report*, loc. cit. It is usually recorded as flying at a very low elevation, but this may be partly a matter of the limitations of observation. The swallow is, of course, markedly gregarious, and the great "flockings" which precede emigration are familiar to all. Old and young usually "flock" and migrate together, but sometimes in separate companies. Occasionally the great flocks migrate *en masse*, but more often in small detachments. A strong migration takes the form of a continuous stream of small and scattered bands. Although notably gregarious among themselves, it is comparatively seldom that swallows are accompanied on migration by other species : the house-martin is the only frequent excep-



Photo by Riley Fortune

Swallow's Nest inside a ruined cottage, against a wall with practically no support



Photo by Riley Fortune

Swallow's Nest built on a stump; inside an outhouse



Photo by F. E. Daniel

Sandmartin's Nest. Burrow cut open to show Nest

tion. (Cf. *B. A. Report*, loc. cit.; F. D. Power quoted by Ticehurst, *B. of Kent*, 1909, p. 131; and for swallows resting on board ship (Mediterranean), and for "An Incident in the Southern Migration of the Swallow" (*British East Africa*), cf. Lynes, *British Birds*, iii. pp. 140-4; and i. pp. 285-7, respectively.) For records of marked swallows returning to the same breeding-place, see on p. 290. [A. L. T.]

4. Nest and Eggs.—The normal nesting-place in the British Isles is among the roofing timbers of a shed or cow-house, but where thatched roofs are prevalent, many nests are built inside chimneys. At the present time nearly all our nests are in or about buildings, but a few exist in the roofs of caves, and several cases have been recorded of nests on the branches of trees. As a rule, the nest rests upon a foundation of some kind, sometimes a mere ledge, but often in the space behind a beam and the wall. In such sites the shape is something like that of a half saucer, with the flat side to the wall, but the rim is circular where the support of the wall is wanting. Occasionally, however, nests of quite a different type, closely resembling the normal type of house-martins, except that they are more open at the top, almost cup-shaped, and built against walls close under eaves or rafters, may be met with, but are generally placed at the angle of two walls if on the outside of a building, though in most cases they are, of course, placed under cover. (For further details see *Zoologist*, 1857, p. 5790; 1858, p. 6241; 1879, p. 157; 1892, p. 65; 1905, pp. 121, 181; and *Naturalist*, 1890, pp. 258, 352.) Many quite abnormal sites are also on record, such as on chains, wire ropes, hanging lamps, in holes of walls, in tunnels, etc. The material used for building is mud, collected from the road, and mixed with bents and straws, which frequently project from the walls of the nest, while the lining consists of bents and feathers. (Pl. xxx.) Both sexes share in the work of construction. Eggs, 4-6 in number, usually 5, rather elongated in shape, spotted and sometimes blotched with red-brown and ashy shell marks on a white ground. (Pl. D.) Average size of 100 eggs, $.77 \times .54$ in. [19.7×13.7 mm.]. Full clutches may be found from about the middle of May onward, and incubation lasts from 15-16 days (W. Evans and S. E. Brock), while the young remain three weeks in the nest. Incubation is performed by the hen alone, the cock bringing food to her occasionally. Two broods are usually reared in the season, and occasionally a third. Saunders records young still in the nest on 23rd October. [F. C. R. J.]

5. Food.—Insects, chiefly flies and small beetles. The young are fed by both parents. [F. B. K.]

6. Song Period.—During the whole period of its stay. [F. B. K.]

HOUSE-MARTIN [*Hirundo úrbica* (Linnæus). *Chelídon úrbica* (Linnæus). Eaves- or window-swallow, martlet, bungy-martin. French, *hirondelle de fenêtre*; German, *Hausschwalbe* or *Mehlschwalbe*; Italian, *balestruccio*].

1. Description.—The martin is distinguished by the dark blue coloration of the upper parts, relieved by a large white patch on the rump. (Pl. 72.) Length 5·3 in. [134 mm.]. With the exception of the white rump, the upper parts are of a dark steel-blue with a metallic lustre, less conspicuous on the upper tail-coverts. The wings and tail are of a sooty brown hue with a tinge of dark metallic green. The tail is deeply forked, but the outermost feathers project only slightly beyond the tips of the closed wings. The under parts are pure white, and the legs and toes are covered with short white feathers. The female is like the male. The juvenile plumage is of a sooty brown above, but with a slight metallic steel-blue sheen in the back. The inner secondaries have broad tips of white, and the inner primaries a narrow edge of white towards the tips. [W. P. P.]

2. Distribution.—In the breeding season the house-martin is found throughout Europe up to about lat. 70° N. in Scandinavia, and rather less in N. Russia, while eastward it ranges to the Yenesei and Kuen-Lun. In North-west Africa, Central and Eastern Asia, it is replaced by allied races. In the British Isles it is tolerably general in distribution, but is more local than the swallow, and is decidedly scarce in North Scotland, where it is said to be decreasing in numbers. It has bred occasionally in the Orkneys and Shetlands, and is common on some of the Inner Hebrides, but absent from others, and has only once occurred as a straggler to the Outer Hebrides. In Ireland, though fairly general, it is more locally distributed than the swallow. On migration, the main body appears to move south by the Nile valley, although some pass along the West African coast and the Canaries. The winter quarters are in Central and South-eastern Africa, a few reaching Mashonaland, the Transvaal, and Upper Natal. The North Asiatic birds winter in N.W. India. The East Asiatic allied sub-species winter in India, South China, and Burmah. [F. C. R. J.]

3. Migration.—A summer visitor and a bird of passage. The movements of the summer immigrants are very similar to the corresponding migrations of the swallow, already discussed in detail; but local writers are all agreed in stating that the martin is, on an average, a few days behind the swallow in its appearance in the various districts. And it is even more marked in the

case of the martin than in that of the swallow, that the west of Great Britain is reached before the east. In fact, in some seasons at any rate, immigration occurs almost exclusively on the western half of the south coast of England, and later at the extreme eastern end, the intervening portion not receiving any immigrants directly (*B. O. C. Migration Reports*, i.-v., but especially i. pp. 92-96). A case has been recorded in which there was "a difference of at least three weeks in the arrival of [this] species at two breeding-haunts within a quarter of a mile of each other" in the south of England (cf. Bonhote, *British Birds*, iii. p. 81). The emigratory movements appear to correspond closely with those of the swallow, but they have not been worked out in such detail. In the inland districts of England emigratory movement frequently takes a south-easterly trend (*B. O. C. Migration Reports*, iv. p. 193), and in connection with this it is interesting to note that a young house-martin, "ringed" in its nest near Lancaster on 31st August 1909, was picked up injured below some telegraph wires at Ewell, Surrey, on 25th September 1909 (cf. Witherby, *British Birds*, iii. p. 219). In the case of the swallow and of both martins, there has been noted a tendency to edge both eastwards and westwards along the Kentish coast towards Dungeness, which is evidently a favourite point of departure for some reason (cf. Ticehurst, *B. of Kent*, 1909, p. 137). The occurrence of solitary examples in late November and early December is more frequent in the case of the house-martin than in the case of the swallow (cf. authors cited under this point in connection with the swallow, *antea*). Such birds may possibly be connected with the passage movements to which we now come. There is, however, very little information about these movements, but what there is points to a slight passage between the winter quarters and both Northern and Central Europe by way of the eastern districts of Great Britain, just as in the case of the swallow. The martin occurs in numbers on Fair Isle (Shetlands) on both passages, and is especially abundant in spring, being then commoner than the swallow there. It has been recorded from the Flannans (Hebrides) as late as 4th November (cf. Clarke, *Ann. Scot. Nat. Hist.*, 1908, p. 83; and Paterson, *tom. cit.*, p. 138). Secondly, house-martins were recorded as participating in the westerly movement of swallows and others first noticed at the Kentish Knock Lightship in the autumn of 1903 (cf. Clarke, *Ibis*, 1904, pp. 123 and 138). The existence of a corresponding spring movement may perhaps be inferred. [A. L. T.]

4. **Nest and Eggs.**—The normal nesting site of this species is on the outer wall of a building, close under the eaves, and those on the same house may face all four quarters. Numerous colonies breed on sea-cliffs in various parts of

Great Britain and Ireland, and in some districts also inland on the face of perpendicular crags. Nests in the roofs of sea caves and inside crevices of rocks are much rarer, but have occasionally been recorded, and at times a number of nests may be found under the roof of a shed or outbuilding, in much the same position as the normal nest of the swallow. I have met with nests of this type in Suffolk, Staffordshire, and Derbyshire, and they have also been recorded from Cheshire (*Zool.*, 1894, p. 400; *Birds of West Cheshire, etc.*, p. 295). In shape the nest is like a half or quarter of a cup, but differs from that of the swallow in being built up to the eaves above, with a narrow opening, instead of being open at the top. It is composed of mud, more regularly built than that of the swallow, and with much less conspicuously protruding bents and bits of fibrous matter, lined usually with feathers and a few bits of straw or dry grass. (Pl. XXXI.) The species is naturally gregarious in its breeding habits, and large numbers of nests may be found in some cases touching or overlapping one another. Both sexes share in the construction. Eggs, usually 4 or 5, sometimes only 3, or rarely 6 in number, white without much gloss. Average size of 100 eggs (Pl. D.), $\cdot 74 \times \cdot 54$ in. [$18\cdot 8 \times 13\cdot 27$ mm.]. The eggs are laid rather late, seldom before the latter part of May, and often not till early June. Incubation lasts about a fortnight, and Thienemann has shown that the male takes part as well as the female. Two and even three broods are reared during the season, and the young of the last brood often do not leave the nest till just before the autumn migration begins. [F. C. R. J.]

5. **Food.**—Insects, chiefly flies and small beetles, but what difference, if any, there is between the food of this species and its congeners is unknown. The young are fed by both parents. [F. B. K.]

6. **Song Period.**—The species sings more or less during the whole of its stay. [F. B. K.]

SAND-MARTIN [*Riparia riparia* (Linnæus). *Cotile riparia* (Linnæus).

Bank- or pit-martin, bank-, sand-, or river-swallow. French, *hirondelle de rivage*; German, *Uferschwalbe*; Italian, *topino*].

1. **Description.**—This is readily distinguished, being the smallest of the British swallow tribe, and of a pale brown colour above. (Pl. 74.) Length 4·8 in. [122 mm.]. The pale brown of the upper parts is relieved by the somewhat darker colour of the wings, the remiges of which have a slight greenish metallic lustre. The under parts are white, save for a band of pale brown across the fore-neck and



Photo by E. L. Turner

Fifty-two house-martins' Nests under one eave



Photo by Riley Fortune

House-martins' Nests on the face of Klinsey Crag, Wharfedale

along the flanks. On the tarso-meta-tarsus, just above the hind toe, is a tuft of pale buff-coloured feathers. The female differs from the male in having a somewhat narrower band across the fore-breast. The juvenile plumage differs from that of the adult in having the wing-coverts tipped with rufous, and broad buff-margins to the inner secondaries. [W. P. P.]

2. Distribution.—A widely distributed species, which is found in the breeding season over the whole of Europe, from 70° N. to the Mediterranean, as well as in Northern Asia and North America, while local races (as yet imperfectly known) occur in Japan and Kamtschatka, N.E. Siberia, and N.E. Africa. An allied species, *R. paludicola* (Vieill), however, to a great extent replaces it in Africa. In the British Isles its distribution is regulated by the presence or absence of breeding sites, but on the whole it is common and fairly general, breeding in most parts of Great Britain and Ireland. It also nests occasionally on the Orkneys in small numbers, and has bred on at least one occasion in the Shetlands. A few pairs nest on Skye and on some of the Inner Hebrides. In Ireland it is very general, and more numerous than the house-martin. European and Asiatic birds winter in Southern Asia (India, China, etc.), and Central to South-eastern Africa, the principal movement being along the east side of this continent. They do not range farther south than the Transvaal. North American birds winter in South America. [F. C. R. J.]

3. Migration.—A summer visitor. It resembles its allies in arriving first and chiefly on the western half of the south coast of England (*B. O. C. Migration Reports*, i.-v.). Its movements, indeed, closely correspond to those of the swallow, both in spring and in autumn, so far as they are accurately understood. In spring, however, the sand-martin is considerably earlier than the swallow: an exceptionally early bird was seen in Yorkshire on 29th February 1886 (cf. Nelson, *B. of Yorks.*, 1907, p. 161). And in the same year the sand-martin and its two allies suffered terrible mortality all over the country from a severe snowstorm which occurred in the second week of May (cf. *Naturalist*, 1886, p. 182). The autumn emigration is also earlier than in the case of the other two species, and is nearly over before the end of September, stragglers being recorded for some time later (cf. *B. O. C. Migration Reports*, iv. p. 194; v. pp. 251-2). There are some records very suggestive of a passage from Northern Europe through the eastern part of our area, although definite proof is lacking (cf. Clarke, *Ann. Scot. Nat. Hist.*, 1907, p. 77; and *Ibis*, 1904, p. 138). The migratory habits of the species are similar to those of its allies. [A. L. T.]

4. **Nest and Eggs.**—The nest is placed at the end of a burrow, usually two or three feet long, in the face of some steep bank, such as a railway cutting, a river bank, gravel-pit, sand-pit, or natural bank of earth. Where suitable nesting ground is available, many nests are placed in close proximity to one another, but in default of proper nesting sites, the birds have been known to breed in holes of stone walls or brickwork, large sawdust-heaps (*Zool.*, 1876, 5108), in the gnarled stem of an elm-tree (*Zool.*, 1870, 2344), or even in old nests of water-ouzel (*Field*, May 30, 1892), and sandy ridges in an open meadow (*Victoria History of Cumberland*, i. p. 8). The burrow slopes slightly upward, ending in a rounded chamber where the nest is placed, a rude affair consisting of straw and rubbish with a profusion of feathers, and generally infested with parasites. (Pl. xxx.) The work of boring is shared by both sexes. Eggs usually 4 or 5, sometimes 6 or even 7 in number, while in some districts 3 is rarely exceeded. They are dull white, without markings. (Pl. D.) Average size of 100 eggs, $\cdot 68 \times \cdot 49$ in. [$17\cdot 3 \times 12\cdot 5$ mm.]. They are generally laid from about the second week of May in the south and later in the north, and incubation lasts about 12-13 days, according to Naumann. Accurate and recent information on this point, and on the share of the parents in incubating, is not at present available, and, on account of the position of the nest, is not easy to obtain. Two broods are generally reared. [F. C. R. J.]

5. **Food.**—Insects, chiefly flies and small beetles. According to Naumann, their favourite food consists of May-flies (*Ephemera*), gnats, and mosquitoes (*Culex*). The young are fed by both parents. [F. B. K.]

6. **Song Period.**—The species sings more or less during the whole of its stay. [F. B. K.]

The following species are described in the supplementary chapter on "Rare Birds" :—

Red-rumped Swallow, *Chelidon rufula* (Temminck).

American Purple Martin, *Progne subis* (Linnæus). [F. C. R. J.]

SWALLOW AND HOUSE-MARTIN

[F. B. KIRKMAN]

I

If its longer wings and body, more graceful flight and quicker movements, were not sufficient to distinguish the swallow from the house-martin, it would still be impossible to confuse the two species, for the latter bears on the lower part of the back, just above the root of the tail, a broad white patch which is visible from afar. As the house-martin recedes before one into the distance, it becomes just a spot of white and nothing more, unless its course be over the unruffled surface of a lake or river: then there are two white spots to be seen, one speeding through the air, and beneath it another, the reflection of the bird's under parts, speeding through the water—twin stars that vanish imperceptibly. The house-martin may further be distinguished from the swallow by the covering of small soft white feathers upon its legs and toes. These look like little white trousers and gaiters, and are best admired when the bird is on the ground, where it walks delicately, as if picking its way through mud.

Of the two species, the swallow is the first to arrive in the spring and leaves us later in the autumn. The "first swallows" may be seen in March, but the great immigration of both species takes place during April and first half of May, the birds arriving in successive flocks along the south coast, and spreading thence throughout the United Kingdom. These, again, are followed by other flocks, which pass over the eastern side of Great Britain on their way to Northern and probably also Central Europe.¹

From the time of their arrival onward, both species pass nearly the whole day in the air. Though they frequently glide on outstretched motionless wings, the repeated twists and turns they make

¹ For a detailed account of the migration of the swallow and house-martin, see the "Classified Notes."

this way and that in pursuit of their insect prey, represents an astonishing output of energy. More than most birds, therefore, they must suffer from failure of their food supplies. A spell of severe frost occurring after their arrival will kill thousands, the fruitless chase after food adding fatigue to starvation, and still further reducing their ability to resist the paralysing grip of the frost. At these times they search the surface of water for anything they can find, and swallows have even been seen clinging to the walls of houses or out-buildings, picking the remains of flies from spider-webs, and adding the spider itself as sauce to their desiccated repast.¹

It is not only in hard weather that the two species seek their food elsewhere than in the air. At all times they may be seen picking insects off the surface of ponds or rivers, often dipping their breasts into the water as they do so. Both occasionally settle on the ground, either to swallow grit, to aid the trituration of their food on the gizzard, or to pick up insects. Lord Lilford relates that more than once he saw a vast assemblage of martins on the gravel in front of his house engaged in devouring minute black winged insects which covered the ground.² No swallows took part in these feasts, a fact which seems to indicate that the two species differ more or less in their diet. Swallows appear to have developed to a greater extent than martins the habit of taking insects from the blades of grass as they skim along. They also pick them off walls, trees, and bushes.³ One has been seen to hover in front of a horse, and then pick a fly off its shoulder.⁴ Their habit of accompanying cattle, horses, carts, and haymakers, in order to snatch their attendant flies, is well known. As long ago as 1774 Gilbert White records, in his letter to Barrington of 29th January, that "horsemen on wide downs are often closely attended by a little party of swallows for miles together, which plays before and behind them, sweeping around, and collecting all the skulking insects that are roused by the trampling of the horses' feet; when the wind blows

¹ Bailly, *Ornithologie de la Savoie*, i. 246.

³ *Ornis*, x. 149 (F. Prévost).

² Lilford, *Birds of Northamptonshire*, i. 243.

⁴ *Zoologist*, 1870, 2307.

hard, without this expedient, they are often forced to settle to pick up their lurking prey," an observation which supplies one of the reasons why the species cannot limit their field of chase to the air.

The same writer notes that when a fly is taken by a swallow in the air, "a smart snap from her bill is heard, resembling the noise at the shutting of a watch-case; but the motion of the mandibles are too quick for the eye." Seeing the motion of the mandibles depends on the distance, no doubt, and also the quickness of the eye. Another observer had the good fortune to be able one day to watch swallows flying backwards and forwards very close to him, so close, indeed, that he could distinguish the details of their plumage. "Not one flew with open mandibles or outstretched neck. . . . But every now and then a sweep to the right, a jerk to the left, a leap upward or a plunge downward, indicated the close pursuit of prey, and a rapid gape of the jaw its inevitable capture."¹ The sudden turns to right or left, upward or downward, may be witnessed without difficulty even at some yards distance in the case of both species. No doubt the martin also captures its victims in exactly the same way.

When the insect is once in the mouth, its chances of escape are small, even though the beak may be opened several times in succession to admit other insects, and none be swallowed; for each, when the mandibles close behind it, finds itself adhering to a "profuse clammy secretion," to quote Macgillivray, who noticed that half a dozen insects or more might be found so caught in the mouths of swallows he shot. This was the case before the birds had young to feed, a fact which shows that they do not always trouble to swallow each insect separately.

Neither swallows nor martins are content merely to snap up small insects, but seize large moths and butterflies as well; sometimes, according to one observer, separating the wings from the body, and letting the former drop to the ground.² This, however, is not a necessary pre-

¹ *Zoologist*, 1865, 9729 (C. W. Bevis).

² A. H. Patterson, in his *Wild Life in a Norfolk Estuary* (p. 217), quotes from letters of various observers both with respect to the fact that large moths and butterflies are caught,

liminary. A large white butterfly, probably the common cabbage one, was seen to disappear suddenly, entombed, as it were, in the throat of a swallow.¹ This easy and rapid interment enables one to realise, better perhaps than by measurement or description, the extent of a swallow's gape.²

The act of drinking is often performed by the two species when on the wing, a fact which, like many others concerning these birds, was carefully noted by Gilbert White. "Each species of *Hirundo* drinks as it flies along, sipping the surface of the water; but," he adds, "the swallow alone, in general, *washes* on the wing, by dropping into a pool for many times together. In very hot weather house-martins and bank-martins (sand-martins) dip and wash a little."³ Swallows also drink when perched on the ground in the way usual to birds.⁴ Probably the same applies to house-martins, but information is lacking.

II

It is certain that both swallows and martins return each year, as a rule, to the same place, for on more than one occasion birds have been marked before departure by attaching to their legs either pieces of silk or parchment, or else metal rings, and by the same token recognised on their return. In one instance, mentioned in the *Field* of 1862, a male swallow was caught, and a piece of parchment tied to its leg. This was done in 1859. The bird made its appearance at the same nest in 1860, 1861, and 1862, the date of the record.⁵ In another instance a house-martin, ringed on 15th July 1906, was caught three years later in the same month, not exactly in the same place, for it

and the method of capture. Robert Newstead, in the *Food of Some British Birds* (p. 40), notes that large nocturnal moths, disturbed by haymakers, are frequently caught by swallows and martins. The species usually taken are *Triphaena pronuba*, *T. orbona*, and *Agrotis exclamationis*.

¹ E. Selous, *Bird Life Glimpses*, p. 258.

² It may here be noted that both species, according to Naumann, regurgitate, in the form of pellets, the hard parts of the insects they swallow.—*Vögel Mitteleuropas*, iv. 197, 207.

³ Letter to Barrington, Jan. 29, 1774.

⁴ Macgillivray, *History of Birds*, iii. 558.

⁵ *Field*, 1862, xx. 319.

had been definitely abandoned by the colony to which the marked bird belonged, owing to the nests having been swept away by a storm, but in a neighbouring stable, a little over a hundred yards away. Here the bird and its fellows had no doubt resorted after the disaster to their nests.¹

In their choice of nesting sites the two species differ, and, speaking generally, the difference is well expressed by two of the popular names given them by the Germans, by whom the swallow is sometimes known as the *innere Hausschwalbe*, or "inside-swallow," and the house-martin, the *aussere Hausschwalbe*, or "outside-swallow." The former usually builds on beams or ledges *inside* barns, sheds, other outbuildings, and in porches, down chimneys, under bridges, and in similar situations; the latter *outside*, under the eaves of houses or on the face of cliffs and quarries. It is said that the original nesting-place of swallows was in the semi-darkness of caves. If so, its preference for places *under* a roof is easy to understand. There can be little doubt that the original nesting-place of the house-martin was on the face of cliffs. There its nests are still frequently to be found, much more often indeed than is commonly supposed. Large colonies occur nearly all round the coasts of the British Isles, and inland on such places as Kilnsey Crag, Yorkshire.² A cliff-colony and a house-colony may be found close together, as at Canty Bay, near North Berwick, where only a few hundred yards separate the colony at the hotel from that building on the face of the rock where stand the ruins of Tantallon Castle. When building on the face of rocks, the house-martin places his nest not on but under a ledge, so that it cannot be washed down. For the same reason he chooses to build

¹ *British Birds*, iii. 299 (A. L. Thomson). For additional evidence in the case of the house-martin see Macgillivray, *History of Birds*, iii. 592 (return of a bird which had had silk tied to its leg); Nelson, *Birds of Yorkshire*, p. 160 (pair ringed in 1893 observed in same place in following two summers); *Zoologist*, 1895, 449 (ringed birds returning to the same nest). See also the *Field*, 1876, Sept. 30; *Ibid.*, 1881, June 4; *Ibid.*, 1893, July 1. For the swallow, see *Field*, 1881, lvii. 785 (return of a pair ringed with brass wire); *British Birds*, iii. 309 (record by C. B. Ticehurst of return of ringed adult); *Aquila*, 1910, 37 (record by Schenk of return of ringed adults, and of three young birds of the previous year returning to their birthplace, two nesting). Another case is supplied me by Aberdeen Bird-migration Inquiry of a swallow ringed near Tunbridge Wells in June 1909, and recaptured at the same place in June 1910.

² See Plate XXXI.

under the eaves of houses. A projecting ledge of rock and a projecting edge of a house are to a martin the same thing. (Nest Plate xxxi.)

Neither species permits itself to be rigidly bound by rule in its choice of a nesting site. The swallow will occasionally build under eaves, its nest then resembling the martin's, except that it is more open at the top. It will also build in a tree. A drawing given by Yarrell shows an open nest placed in the fork of a bough.¹ Another was found placed on a small branch scarcely more than an inch thick. It had no supporting twigs, but overlapped the bough on one side.² These sites are commonplace compared to some that are chosen. One pair, for instance, built in the circular spring of a bell placed just over a doorway, and there remained, deaf to the frequent clanging.³ Another attached a solid round structure, made of the usual mixture of mud and straw, to one side of the top of a circular glass ceiling protector suspended over a gas burner. In this two broods were reared, in spite of the fact that the young, when nearly fledged, were frequently in imminent danger of being swung out of their home at moments of gastronomic exaltation.⁴ Many similar curious sites have been recorded. The house-martin, on its part, is prepared at times to build *inside* buildings and also in caves.⁵ In some localities, as in the Dee district of Aberdeenshire, it has in fact deserted villages and hamlets for dark, damp caverns on the coast, where the young are reared in almost total darkness, the change being probably due to persecution by sparrows.⁶

As the swallow is properly a builder in caves, it is content with an open nest. This generally has the shape of a half saucer, and is attached, bracket-like, to a wall, usually with, but sometimes without,

¹ *History of Birds*, ii. 348.

² *Field*, 1883, vol. lxvi. p. 359. See *Ibid.*, p. 391, for a nest built "on a spray of jasmine . . . quite a foot away from the wall, and anchored to some sprays of Japanese honeysuckle." Also Mitchell, *Birds of Lancashire*, for another instance.

³ Warde Fowler, *A Year with the Birds*, 1886, p. 43.

⁴ *British Birds*, i. 355.

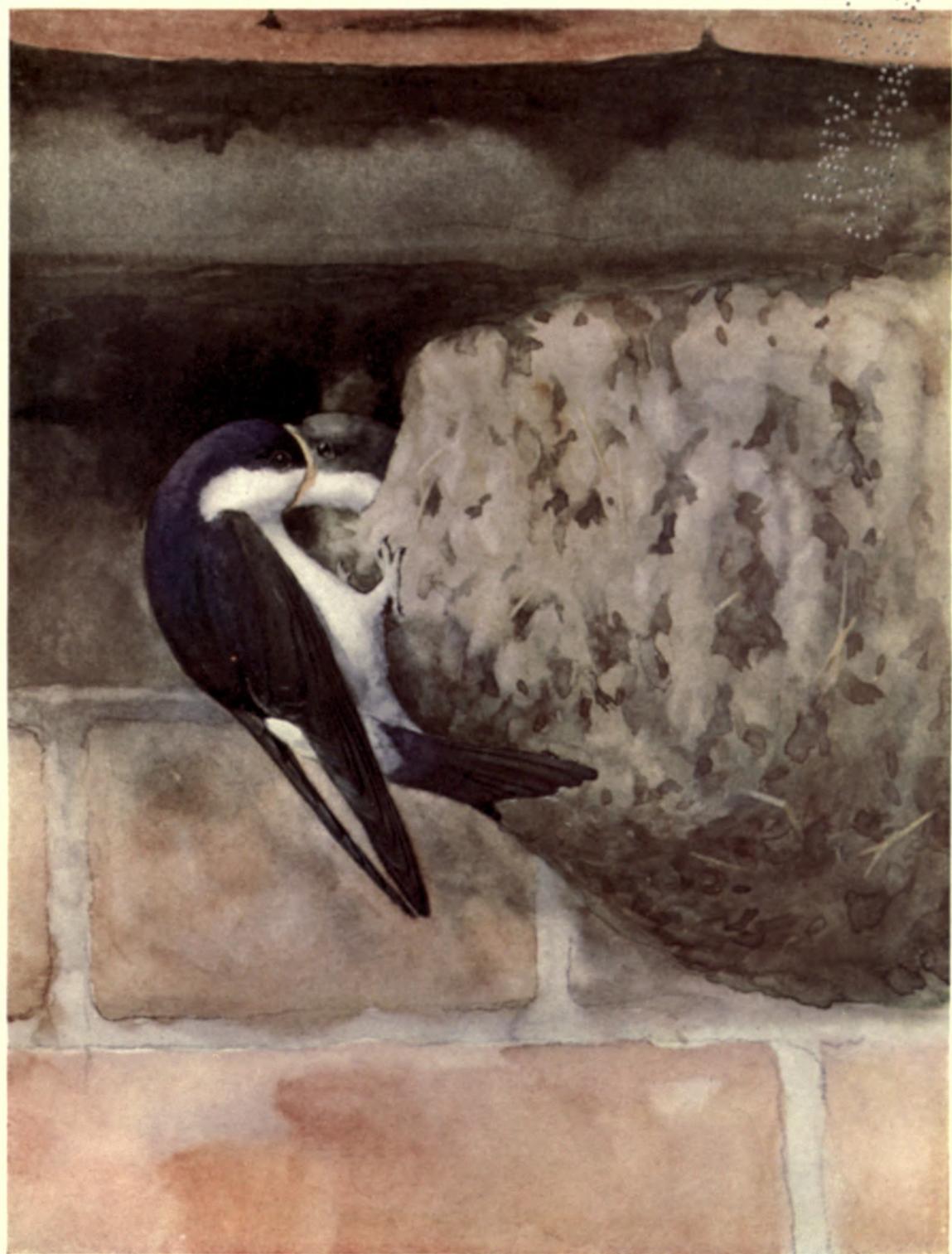
⁵ See the "Classified Notes." Also Naumann, *Vögel Mitteleuropas*, iv. 207 (footnote); Forrest, *Fauna of N. Wales*, p. 136; Gray, *Birds of the West of Scotland*, p. 207.

⁶ Sim, *Fauna of Dee*.

Plate 72

House-martin feeding its young (p. 303)

By G. E. Collins



a supporting ledge. Where, as is sometimes the case, the farther side of the nest is not against a wall or beam, it is circular. Illustrations of both forms are given on Plate xxx. But to attach an open nest to the face of a wind-swept cliff would be to court disaster: lining, eggs, and incubating bird might easily be blown out and away. It is not difficult, therefore, to understand why the house-martin, unlike the swallow, builds a closed nest, leaving towards the top only a small hole for entrance. In this snug abode, of which the mud walls may be half an inch thick, the bird has little to fear from the elements, provided, as already explained, there is a sheltering projection to break the direct downward flow of the rain on the flat of the wall or cliff. Notwithstanding this precaution, nests fall during heavy continuous rain, possibly because it beats against them from the side, if it does not flow round under the overhanging ledge.

Swallows, as a rule, are less sociable during the breeding season than martins. A German ornithologist, who made a census of the swallow population in one village, found that twenty-eight buildings out of forty were occupied, all except two by single pairs, and the exceptions by not more than two pairs each. The latter, however, were not under the same roof, and, according to the writer, would not have submitted to the intrusion of a second pair into their own shed.¹ Yet more than one pair may be found not only in a shed, but in the much more confined area of a porch; and Naumann states that he has seen as many as forty nests together in one large cow-house. House-martins, on the other hand, though they may be found breeding in isolated pairs, often crowd their nests together to such an extent that, so to speak, they elbow and squeeze each other. In a length of nine yards under one eave, forty-six nests have been counted² and twenty-one in a space of five to six yards.³

The solid mud homes of swallows and martins are not built for one season only: they may be used again and again, much time being

¹ *Zoologisches Garten*, 1876, 203 (H. Schacht).

² Nelson, *Birds of Yorkshire*, i. p. 158.

³ *Field*, 1863, xxii. 127. See also Pl. xxxi.

thereby saved. A bit of mud here, a bit there, a new lining, and the nest is ready for the eggs. Those birds which have, or prefer, to build new nests are much later in hatching their broods.

In their method of building the two species are much alike. They begin by collecting wet mud either at the edge of a puddle, pond, or elsewhere convenient. They are easily watched when thus employed, and what chiefly strikes one is the contrast between the neat, clean, bright-feathered little birds, especially the martin with his spotless white gaiters, and, on the other hand, the dirt through which they walk as if not liking it, but which they nevertheless cheerfully pile upon their bills and also scoop into their mouths. Thus loaded, they depart to the chosen site. As the swallow usually builds upon a ledge, his task is comparatively easy. It is not so with the martins. He builds under a ledge, attaching the top of his nest to its undersurface and the back to the flat wall or rock below, often without any kind of supporting projection. There is usually nothing to prevent his home from falling to the ground except the strength of its adhesiveness. Now wet mud, especially if clay, adheres firmly enough, as our boots show us after a tramp through heavy soil. And the maid who cleans those boots next morning can tell us that dry mud is quite adhesive enough to be a nuisance. The chief difficulty that the martins have to encounter is to ensure that the weight of the mud, when wet, will not more than counteract its adhesiveness. The difficulty is usually met by the habit the birds have of building up the walls a little at a time, and by waiting till each successive layer is dry before applying the next. As dry mud is about a third less heavy than wet—a statement which any one can test, by weighing a given piece of mud in the wet and the dry state—it will be evident that the precaution is a wise one. Wet mud, again, being soft, might yield under weight, and lose shape or give way. The birds, therefore, gain by putting the new wet layer on a basis that has become firm and hard. But to what extent the precaution is essential to the safety of the nest has never been tested. Normally it takes about ten days to

complete a martin's nest, but sometimes, when the bird is pressed by the necessity of laying its eggs, the time may be reduced by half or more. In these cases it is possible that the drying process may be left incomplete. If so, it would be interesting to know whether the stability of the structure is seriously affected.

The nest is begun from the bottom, both the cock and the hen sharing in the work. With feet clinging to the wall, and with tail pressed hard against it, each in turn puts in position its pellet of mud and presses it with its chin, that is, with the base of the under part of its bill. The nest grows outwards and upwards, so that at one stage it assumes a shape not unlike the half saucer of the swallow. In this both cock and hen may sometimes be seen at the same time, working—but not always: playful pecks, nibbling caresses, joyful twitterings, show that their interests are not merely architectural. When the walls are finished the martin, as also the swallow, lines the inside with feathers, dry grass, and other soft material, sometimes seized by the bird when on the wing.

Nests vary very much in their adhesiveness, this no doubt depending upon the nature of the soil used. Some fall bodily to the ground, and others seem ready to do so at the slightest touch. I remember once stretching my hand up to a martin's nest which had been forcibly appropriated by a pair of sparrows. These little pests had refurnished their misgotten home in their usual profuse and in-artistic style, with the result that several ends of hay projected from its entrance. In the hope of dislodging the usurpers, I began to draw out the ends, and was not a little astonished (and not very sorry) when the whole structure suddenly parted from the wall and fell to the ground with a rattle—mud-walls, lining, and eggs.

In order to account for the adhesiveness of the normal nests, some writers are of opinion that the bird cements the mud with its saliva. There is something to be said in favour of this view, for it is certain that a portion at least of the mud placed in position is carried inside the bird's mouth, where it would become moistened by the "profuse

clammy secretion" which Macgillivray has noted.¹ The same writer, however, states that he failed to discover "traces of glutinous or albuminous matter in the nests of our white-rumped or red-fronted swallows."² He does not mention the tests used, and at the time of writing these lines (January) I was unable to verify his statement, as the analyst consulted required a fresh-made nest. Macgillivray also omits to mention whether the nests he examined were fresh. The matter, therefore, must be left in doubt.

The cohesiveness of the nests is no doubt aided by the admixture of hair and straw; but it is curious that these additions should be found most abundant in the nest of the swallow, though they can hardly be more necessary to it than to that of the house-martin. Their presence in the mud-walls of the latter species has generally the appearance of being due to their having been picked up accidentally with the mud.

There is reason to suppose that martins and swallows set about building or repairing their nests shortly after their arrival. The fact that some nests are begun six or seven weeks after the appearance of the first birds on our shores is probably to be explained by the protracted nature of the immigration, certain birds appearing much later than others. Occasionally delay is caused by the non-arrival of one of a pair. Good examples of this were given by a French naturalist, M. P. Vacquez, at the Ornithological Congress of 1900.³ In 1896 a pair built inside his dining-room, over the door. Next year the cock appeared on April 11, fluttered at the window, was let in, and went to the nest. But he waited day after day in vain for his mate, who had evidently perished on migration. At last he decided to wait no longer, and contracted a fresh union. Whether he did this at the expense of a neighbour, or found a disengaged hen, was not discovered. His second wife differed in disposition considerably from the first. The latter was a stay-at-home, the second a gad-about—*coureuse*. The old had evidently possessed artistic tastes, for, when rest-

¹ See above p. 289.

² *History of Birds*, iii. 578, 599.

³ *Ornis*, 1900-2, p. 253.

ing, she was wont to perch upon a china dish. The new wife perched upon the nest. Her first act was to set her house in order. She cleaned out the existing nest, carrying away in her beak all the refuse it contained, and then, with the aid of her husband, proceeded to chase out of the room certain other pairs who had the presumption to claim a share in its possession. These were probably the offspring of the first wife, with their mates. A furious fight ensued, sometimes as many as six birds whizzing and battling with deafening noise over the heads of the human occupants. Finally the step-mother remained in possession, and reared in peace a brood of three. In 1898 the cock returned at a later date, the 17th, his mate following on the 23rd. The old nest was again cleaned and one brood reared. In 1899 he appeared still later, on the 20th, and waited two days, but no wife followed. He then went and sang all distraught upon the neighbouring roof tops, calling her to come. But she came not, and after long waiting, he abandoned hope. On the seventeenth day after his arrival he brought into the nest a new mate, or rather drove her in, fluttering behind her and cutting off her retreat, for she seemed to have been captured by force rather than wooed, and showed it, when he was absent, by taking immediate flight.¹ However, she ended by bringing a family of four up to the third week of their existence, when, for some unknown reason, they were found dead in the nest. Next year (1900) both returned together on April 22, and successfully raised a brood of four. At this date the record ends.

Let us note in passing a case in which a cock swallow, who returned without a mate, found himself eventually in possession of two. The first he sought for, the second presented herself and began a nest on the same beam where the first was incubating her eggs. The cock at once offered his assistance, and helped to complete the nest. He did not, however, fail in his duties to his first mate, whom he fed assiduously. Both hens hatched out their young successfully,

¹ Close observation of mateless cocks may show that they actually succeed in appropriating the hens of mated birds. That they certainly make the attempt is shown on p. 299.

and got on quite amicably together. The cock helped to feed both broods.¹ The *ménage à trois* has been reported in the case of house-martins, and is probably not infrequent in the case of other gregarious nesting species.²

The beginning of nesting operations is no doubt also delayed by bad weather—cold, wet, or windy sometimes extending the period from the usual ten days or less to more than double that time. Two illustrations of this follow, which, like the preceding episodes, will serve incidentally to give us an insight into other features of the domestic life of swallows and martins.

The first concerns a pair of house-martins. These began to build at dawn on May 1. They worked till noon, then left off till 5 P.M., when they began again, stopping at 6, after which they disappeared. This represents a normal day's work in fine weather. Next day was cloudy. The birds did not appear at the nest till 11 A.M., they started work at 12 P.M., and disappeared at 3 P.M. On May 4, which was cold and cloudy, they did not appear at all. May 5 gave promise of a beautiful day, and the birds were at work from dawn. A thick mist stopped operations at 9 A.M. At 5 P.M. it was again bright, and an hour's work was done, the pair remaining to roost in the foundations of their nest. It was not completed till the 19th, thus taking nineteen days, during which time the weather was generally bad. Three full days' work only were done; on six days no work at all, and on the remainder varying amounts, sometimes very little.³

The following account of a pair of swallows, which I owe to a German ornithologist, is still more detailed.⁴ The cock arrived on April 22, and next morning his mate joined him. On the 24th they began building upon a small nesting-shelf. As they were not in agreement as to the site of the nest, each began operations on a different

¹ *Zoologisches Garten*, 1868, 77 (Dr. R. Meyer). The editor notes a similar instance in which a cock siskin mated with two hen canaries.

² E. Selous, *Bird Life Glimpses*, p. 244.

³ Summary of a record kept by Hepburn, and published in Macgillivray's *History of Birds*, iii. 582.

⁴ H. Schacht in the *Zoologisches Garten*, 1875, 20-29.

part of the shelf. This did not prevent them, however, passing the night amicably side by side. Next morning they were absent. By the time they returned the cock had evidently been convinced of the error of his ways, for he abandoned his site for that of his mate. On the 28th a cold raw wind brought building to a standstill. The same on the morrow, and every day to May 6. The pair lost all desire to build, and were either absent searching for food in sheltered valleys, or they sat drooping on their shelf, pressed side to side, a picture of love in misery. From the 6th to the 11th the work went merrily on, interrupted, however, on the 9th by the sudden appearance of a strange cock swallow, evidently in search of a mate. The cock in possession was not, however, at all disposed to yield up his wife. A furious fight ensued, the rivals chasing each other in the air, or fluttering to the ground, where they tugged and grappled with all their might. The intruder was at last put to flight. The victor returned in triumph to the nesting-shelf, and great was the rejoicing of him and his mate. They stood face to face, nodding their heads till they were tired, and chattering excitedly till they could chatter no more.¹ With the 11th came bad weather, and it was not till the 24th that the nest was built and furnished, having taken thirty days to complete. The first egg was laid next day. On the 27th another unmated cock—or it may have been the same one—entered on the scene to disturb the domestic peace. But short work was made of him. He was picked up in a semi-conscious state from the floor, and, when put down, was again attacked by the indignant husband, and managed with difficulty to escape.² On May 29 there were five eggs in the nest, and incubation began. It was performed by the hen. The cock brought food to her, announcing each of his appearances with a joyful twittering, to which there came an answering joyful twitter from the nest. Occasionally the hen left the eggs to do a little hunting for herself and stretch her wings, but only for a few seconds. Hour after hour she

¹ This nodding is the only form of love-display of which I can find a record.

² The existence of these mateless birds has already been partly explained on pp. 296-297 above. Some may, of course, be young birds of the previous year that have not yet found a mate.

sat, and day after day, fourteen in all, till on June 12 the young broke from their shells.¹

It will be clear from the foregoing accounts that swallows and martins normally build their nests in a leisurely manner, giving up some hours a day to feeding, rest, and other usual activities. That these hours should be during the heat of the day explains itself. One effect both of the pause and the time of its daily occurrence is, as already noticed, to give the mud of the nests time to dry. That this is an effect and not a cause seems evident from the fact that many other species, which do not build mud nests, usually limit their building chiefly to the early hours of the morning. They make a pause, no doubt, because they need time to feed, and they work by preference early in the morning, because it is then that they feel most fresh and vigorous. But nests have not infrequently to be built at short notice. This, in the case of swallows and martins, usually results from the fall of the first nest, or its appropriation by sparrows, or the delays caused by weather to which reference has already been made. Both species, pressed by the necessity of finding at once a place for the eggs, will then, like other species, work in any weather and at all hours of the day. They will act in the same way when repairing damage done to part of a nest. Hepburn relates that the upper front side of a martin's nest fell out when the eggs were on the point of hatching. Though it was raining, the nest was repaired in a few hours, one bird usually sitting, the other building. The work had hardly been completed when the young were born.²

The sparrow is an ever-present evil in the lives of martins, who are not only deprived of the result of their labours, but have not even the satisfaction of feeling that their persecutors are troubled by pangs of conscience. On the contrary, the sparrow, once in possession of the nest, puts on airs of outraged virtue if the victims so much as protest. Secure in the superior strength of his bill, he sets his new house in order with all the conscious rectitude of a public

¹ The male house-martin also feeds the incubating female.

² Macgillivray, *History of Birds*, iii. 585.

benefactor. The only resource left to the martin is to get aid from his fellows, and this he appears occasionally to do, but why at times and not at others has yet to be ascertained. On one occasion a cock sparrow who tried to gain possession of a martin's nest was attacked by the owners and three other pairs, and was driven off. He does not appear, curiously enough, to have received much aid from his mate; and when he failed in a further attempt on the nesting-hole of a blue-tit, she deserted him.¹ But these combined assaults by house-martins are not always, if usually, successful. Weir mentions a case in which a pair of sparrows, who for eight days had watched the building of a martin's nest, took it and held it against the owners and three other pairs.² It has been often stated that martins will actually fill up with mud the entrance to the nest when the hen sparrow is sitting inside, and so entomb her alive. Unfortunately, none of the accounts I have found are published by actual eye-witnesses.³ The most detailed is given by an Austrian naturalist, F. C. Keller, who quotes verbatim the letter of a school inspector, Dr. Josef Gobanz: "In the spring of 1883 a pair of martins found its old nest occupied by sparrows. The hen sparrow was sitting in the nest, and resisted with strong blows from her beak all attempts at ejection. After many hours' vain efforts on the part of the pair of martins to regain possession, the cock sparrow, who kept near to the nest, was first chased away by several martins, while a large number appeared in front of the nest, and compelled the hen to remain inside. The martins then filled up the entrance. When the hen sparrow realised the situation, she sought to escape, but it was too late; she could only get her neck and head through the opening, and thus she remained, and died"—a spectacle for the curious and a warning to evil-doers.⁴ There is good evidence that sparrows are occasionally found immured in this way. The fact has been at least twice reported by

¹ *Irish Naturalist*, 1903, 161 (C. B. Moffat).

² Macgillivray, *History of Birds*, iii. 500.

³ Macgillivray, *op. cit.*, iii. 591 (three instances); *Field*, 1860, xv. 509 (several); *Mitteilungen der Aargauischen Naturforschenden Gesellschaft*, Heft x. (H. Fischer Sigwart); *Zoologist*, 1849, 2605.

⁴ *Ornis Carinthiae*, p. 52.

eye-witnesses, in one case the victim being a nestling.¹ But it is difficult to understand why a house-sparrow should not be able easily to push out the wet mud, seeing that its bill is strong enough to break the dry, which it does in enlarging the entrance to the nests it seizes. It may be that it is compelled to remain within the nest till too hungry or tired to make the necessary effort. The matter can only be settled by detailed direct evidence, and this is still wanting. The same applies to the statement that individual swallows occasionally hibernate in this country instead of emigrating. The thing is not impossible. There is simply no satisfactory proof that it has happened.

There is evidence that swallows' nests are occasionally appropriated by sparrows, but they do not suffer to the same extent, a fact that they owe no doubt to the partiality of the sparrow for holes.

House-martins have sometimes to defend their nests not only against sparrows, but against their own kind. I have seen (June 9) two martins fighting in a nest, and continuing the fight in the air outside, as they descended almost vertically to the ground. Stevenson, on June 12, saw three enter a nest, where they struggled together, wings and tails alternately projecting from the aperture. Here two pairs were engaged, and sometimes all four birds would fall fighting in a "feathered mass" through the air. The engagement lasted twenty minutes, one pair being finally left in possession of the nest, where they remained for some time twittering with excitement, and evidently determined to remain on guard.² The cause of these fights, having regard to the late date of their occurrence, is not easy to understand. It is possible that the attacking pair had lost their own nest, and that the hen was in haste to find a place for her first egg.

III

The young of swallows and martins are hatched after about a fortnight's incubation, and are then fed by both parents.

¹ *Zoologisches Garten*, 1901, 312; *Field*, 1860, xv. 509.

² *Birds of Norfolk*, i. 334.

Nestling swallows, being in an open nest, may, when old enough, all be seen sitting along its front margin, scanning with eager black eyes that radiant spot of the somewhat dim and limited universe of their shed or chimney, where, at any moment, one of their parents may start suddenly into view. That moment, when it arrives, they greet with an uproarious twitter, their heads becoming so many gaping orange mouths. The next instant the old bird is clinging to the nest, the flame-hued mouths press upon her, she chooses one, thrusts into it a bundle of flies, perhaps does the same by a second, then off she darts, and the little heads, from being all mouths, become once more all eyes.

There is no regular order observed in feeding nestling swallows. I have not seen more than two fed at one visit, and the same one or two may be fed on two or even more successive visits, but whether by the same parent or a different is not easy to ascertain, as the sexes are almost alike. On the whole, however, the result shows commendable impartiality.

Whilst all the young swallows of a brood are able to enjoy the pleasures of anticipation together, only two young martins can find room to put their heads out of the narrow entrance to their nest; but, on the other hand, they can watch each meal winging its way towards them from a much greater distance; and they watch untiringly, their little black-capped, white-bibbed heads turning this and that way, as they scan the great world of sky, roofs, and trees, whence come those savoury, succulent bundles that are thrust down their yellow throats. (PL 72.) But not more than one is fed at a time, at least as far as my observation goes, and that one, to judge from the motions of the parents' heads in its mouth, is fed two or three times. Herein the martin differs from the swallow, who often feeds at least two nestlings at one visit. Perhaps each parent feeds different nestlings, the swallows taking two or three each, the martins one each; but evidence is not only lacking, but very difficult to secure.

The visits to the nest occur on the average every three or four

minutes, several insects being of course brought each time. These are put into the throats of the young in bundles, as already described. One such packet was dropped by a house-martin at the very moment of delivery to its offspring, and it fell by strange fortune onto the hat of an ornithologist, who hastened to place it under a magnifying glass. This revealed a cluster of insects, some with life enough left to struggle. One did actually manage to disengage itself from the rest, and crawled away, having escaped "literally from the very jaws of death."¹ In similar packets carried to its young by a species of like habits, though of a different Order, the alpine-swift (*Apus melba*), a Swiss naturalist found 150 to over 200 insects. He estimated that the total number caught by one of these birds in a day of ten hours would amount to about 2000, a figure that makes it profitable to reflect on what we might have to suffer if swallows, martins, swifts, and other fly-eating species were not with us in sufficient numbers.²

The young of both species remain from three weeks to a month in the nest,³ at the end of which period comes one of the most exciting experiences of their lives—the first flight. To quit the solid security of the home they know, and drop at once and irretrievably into an invisible something of which they know nothing, may well excite fears and hesitations in their breasts. So they pause, and flap uncertain wings, almost make a start, almost lose their balance, and with it their courage, so much so that they retire into the nest to think, before they emerge again to look, and to watch their parents, now hovering on fast-beating wings close there in front of them, now gliding away in smooth, effortless flight, to return once more, thus showing them how easy it is, and how pleasant. So at last, enticed, urged, encour-

¹ Warde Fowler, *A Year with the Birds*, 1886, p. 43.

² Studer and Fatio, *Katalog der Schweizerischen Vögel*, Lieferung ii. p. 145. Article by Dr. Leo Zehnter.

³ The following dates of hatching and fledging of house-martins are given by H. Fischer Sigwart in the *Mitteilungen der Aargauischen Naturforschenden Gesellschaft*, Heft x. :—(1) 28 June to 28 July; (2) 7 June to 7 July; (3) 20 June to 24 July. For the swallow H. Schacht, in the *Zoologisches Garten*, 1873, 20-29, records the period for one first brood as lasting from June 12 to July 5, of the second brood as from August 6 to August 17.

Plate 73

Swallow about to feed young

By G. E. Collins



aged, they yield themselves, and go. Next moment they are in possession of a new power and of a new world, with its myriad wonders. But matters do not always pass thus. Moral persuasion may fail, or the temper of the parents may fail; then the offender may be hustled and pulled. Weir, quoted by Macgillivray, states that he once saw an angry mother house-martin approach an over-cautious fledgling, and just when it opened its beak in the mistaken expectation of food, seize it by the lower mandible with the claw of her right foot, and "use all her efforts to pull it out of the hole." She did not succeed, and no doubt made matters worse, patience being the first principle of pedagogics in the educational systems both of men and mice and martins.

The young birds continue to be fed by the parents after they have left the nest, and receive their food either perched on a bough, roof, telegraph wire, or other suitable place, or else in the air itself. When the latter, old and young bird rush together and hover breast to breast, their beaks meet as for a kiss, they part, and the dainty aerial meal is over.

How long this state of dependence upon the parents lasts has not yet been ascertained with any certainty. It is brought to a close by the preparation for the second brood, at least as far as the hen-bird is concerned. The cock may possibly feed the first brood more or less irregularly until the second brood claims the whole of his attention. According to Mr. H. E. Forrest, young martins of the first brood may then occasionally be seen helping to feed the second brood, and even helping to build a new nest, if that in which they were born falls down.¹ When not destroyed, the old nest is generally used, frequently two or three old swallows' nests are used in turn by the same pair.² The swallows, however, whose domestic experiences were described on pages 298-299, built a second nest on their nesting-board. It took only seven days to build, but the workmanship was not up to the standard

¹ *Fauna of North Wales*, p. 137.

² F. C. R. Jourdain (*in litt.*)

of their first.¹ Out of thirty pairs of swallows in a village, twelve had second broods, and six of these built new nests.²

Third broods are reared by both species, but to what extent is not clear. Sometimes a late second brood, or third brood, is deserted by the parents, and left to die of starvation in the nest. It has been thought that this desertion exemplifies the supremacy of the migratory over the parental instinct, but the explanation seems to be rather that the old cease bringing food because there is none, or not enough. Nature's decree is that the young must die, as they have not the strength to go where food is to be found. The old have still strength, and they go. So the cradle becomes a sepulchre. In the following spring the forgotten bones are tossed out, and the sepulchre becomes once more a cradle.

While the parents are occupied with preparations for their second broods, what are the first doing? How they spend their days is quickly told—they fly, and feed, and rest. Their roosting habits require a more detailed account, and this may well form part of a general account of the roosting habits of the two species.

The parent house-martins roost in their nests throughout the breeding season. In the early stages of building a new nest they go away to sleep, but where appears uncertain, presumably—like the swallow—in some reed or osier-bed, where these are to be found. When the nest grows large enough to accommodate them, they sleep in it. During the nineteen days which the pair watched by Weir spent in building, they roosted at the nest seven, and away eleven days. One day one of the pair went, the other remained. The later absences—those that occurred after the nest was advanced enough to provide a bed—were due to cold or windy weather, against which its half-built walls gave little shelter. Once the nest is finished, no better resting-place for the night could be found. It becomes less desirable when the young are born,

¹ *Zoologisches Garten*, 1875, 20 (H. Schacht).

² *Ibid.*, 1876, 203.

and still less so when both parents and the fully fledged young all crowd into it together, not without much hustling and mutual recrimination, subversive both of filial piety and parental devotion. Whether the first brood continue to return to sleep when their mother is actually sitting on her second clutch of eggs, I am not certain, but they appear usually to betake themselves elsewhere after the second brood is hatched.¹ Members of both broods may, however, be found in the nest together. Weir caught in one nest both parents, two young of the first brood, and four of the second.²

The nest of the swallows is less attractive as a dormitory. The cock, during the breeding season, roosts either on the edge of it, on some convenient perch near it, or, according to Naumann, occasionally away in some osier or reed-bed. These latter may have been non-breeding birds. The hen would naturally roost in it from the moment her first egg was laid. She roosts with her mate when the nest is building, and no doubt also when the pair return to their old nest, but whether they roost in or near it I do not know. The young, when fledged, usually return to the nest, but sometimes, possibly because the nest has been disturbed, both parent and fledglings desert it to roost on the bough of a tree, where they may be seen drawn up in one or two lines, their heads tucked away. When the first broods are able to shift for themselves they roost together in reeds or trees or bushes, where they are joined later by their parents and the second broods. As night approaches, flock after flock may be seen to rush down from the sky to the roost, like showers of large 'black soot-flakes.'³

IV

If the swallow is inferior to the martin as an architect, he excels him in song. This is a cheerful, musical twittering, which the bird utters either when perched or as he flies through the air. Sometimes

¹ According to detailed observations by H. Fischer Sigwart in the *Mitteilungen der Aargauischen Naturforschenden Gesellschaft*, Heft x., already quoted.

² Macgillivray, *History of Birds*, iii. 592.

³ *Zoologist*, 1870, 4558 (J. J. Briggs).

more than one may be heard singing together. The martin's song, also heard in flight, has been figured as *chir-r ruee*, *chur-r-ruee*, *ruee*, *ruee*, but it sounds best when he is twittering contentedly to himself inside the nest, which he often does. The usual call-note of the martin is a kind of *chirrup*, but the species is said to have a softer note when calling its young in the air to be fed. From the nestlings I have heard two distinct notes, the usual *chirrup*, varied occasionally by another difficult to describe—a more rasping note, something like *qrrrr*! The usual note of the swallow is a twitter. The nestlings have a somewhat similar note, the uproarious twitter with which they greet their parents' visits with food, and to which reference has already been made. According to my experience, nestling swallows are usually quiet between the visits. Nestling martins certainly are not, perhaps because they have their parents, or other martins they mistake for such, frequently in view. Their twittering may indicate the interest they take in the movements of the flying birds. On the other hand, there are species like the redstart, whose nestlings may be heard keeping up a continual twittering between the visits of the parents, even when the latter cannot be seen by them.¹ The notes of nestlings, the occasions on which they are used, and the reasons why those of some species are more silent than others, is a subject that has so far received small attention. It is one of those many undiscovered regions of ornithology that awaits its explorer.

In addition to its ordinary twittering note, the swallow has a shrill alarm-note.² It is to this that Gilbert White refers in his letter to Barrington of January 29, 1774:—"The swallow, probably the male bird, is the *excubitor* to house-martins and other little birds, announcing the approach of birds of prey. For as soon as a hawk appears, with a shrill alarming note he calls all the swallows and martins about him, who pursue in a body, and buffet and strike their enemy till they

¹ Cf. vol. i. p. 423.

² Two, according to Naumann; one when the enemy is still far off, the other when close to. —*Vögel Mitteleuropas*, iv. 190.

have driven him from the village, darting down from above on his back, and rising in a perpendicular line in perfect security. This bird also will sound the alarm, and strike at cats when they climb on the roofs of houses, or otherwise approach the nests." One pair, whose nest I visited twice only, would, when they saw me about, even after days, swoop down upon me, as they did upon the cats, passing with a shrill double note close to my head, so as to give me the wind of their pinions.

According to Naumann, who had far better opportunities of studying hawks than we have at present in this game-stricken country, there are only two from which swallows and martins have much to fear—the merlin and hobby, particularly the latter. While they are ready to follow and harry others, these fill them with dread, and they are frequently caught, the swallow less easily than the martin. The latter in its terror sometimes falls to the ground, when pounced upon, though untouched. Naumann states that he often picked up such birds, found them quite uninjured, and, when they had recovered consciousness, saw them quit his hand to fly off active and swift as ever. He never noticed this in the case of swallows.¹

That the mortality among swallows and martins must be very great is evident from the fact that their numbers remain on the average stationary. Large numbers perish on migration. Thousands, if not hundreds of thousands, are slaughtered for the S. European markets as they pass on their journey. Many more perish in sudden gales of wind or rain as they cross the Mediterranean, unless fortunate enough to meet with a ship on which to rest.² Even then they are not always safe, as the following incident will show. Some exhausted swallows had alighted on a ship off Crete, and with them three or four woodchat-shrikes. One of the latter, after eyeing a swallow for a few moments, sidled up, and suddenly pouncing upon it, the two fluttered to the deck. There the shrike hammered in the

¹ *Vögel Mitteleuropas*, iv. 199, 206, 209.

² For full details on this point see *British Birds*, iii. 133 (H. Lynes).

skull of its victim, tore it up, and ate it voraciously. The other shrikes tried to get a share of the repast, but were driven off, and, curiously enough, made no attempt to kill a swallow for themselves. Perhaps they were too exhausted to make the effort. Later all were blown off astern by a stiff "nor'-wester." As the ship was then two hundred miles from the nearest land, it is probable that the only one who succeeded in reaching land was the shrike "that seized the opportunity to fortify the 'inner bird.'"¹

When the migrant hosts have successfully passed over the nets of the spoiler and the waters of the Mediterranean, they have still to find their way to winter quarters, sometimes far away south into the heart of the African continent, and no doubt many more perish from one cause or another. So it comes to pass that thousands start that never reach their journey's end, and of those that do, many are doomed to die on the homeward way in the spring. Those that see again the familiar nest in which they were born are few and far between.

SAND-MARTIN

[F. B. KIRKMAN]

The sand-martin, while resembling the swallow and house-martin in its shape, may at a glance be distinguished from both by its mouse-brown or dark sandy colour. It is the smallest of the three species, being on the average half an inch shorter than the house-martin, and two and a half shorter than the swallow. In its flight it is more jerky or butterfly-like, and it is less frequently seen gliding through the air on outstretched wings.

Like its two congeners, the species is a summer migrant. It makes its appearance in thousands on our south coast from March

¹ *British Birds*, iii. 187 (H. A. F. Magrath). See the same volume (pp. 36, 69, 99, 133) for important notes on the "Migration of Birds in the Mediterranean," by Commander H. Lynes; also pp. 220, 255.

till May, the earliest birds being in advance of the proverbial first swallow. As, unlike its congeners, it avoids human habitations, its movements after its arrival are not well known. It apparently does not resort at once to its nesting-place, but goes to its favourite feeding haunts, which are usually, if not always, near and over water. There it may be seen hawking for flies much like swallows and house-martins, and often in company with them. Like them, again, it will at times pick its food off the surface of the water. But feeding is not its only occupation at this time. Its attention is largely engaged by love affairs, as is evident from the fighting and quarrelling that takes place in mid-air, and which sometimes ends in the combatants falling together to the ground. The fact that there is fighting does not, of course, invalidate the view that the birds pair for life. The fighting may be due to rivalry between unmated males, principally the young of the previous year; and not only so, but also between the unmated and the mated, for, as we have seen in the case of the swallows (p. 299), the latter have not infrequently to fight for their spouses even after nesting operations have commenced. Whether the successful males win by force of valour only, or whether they add some form of love-display, still remains to be ascertained.

In their nesting habits sand-martins differ considerably from the swallow and house-martin. The latter build mud-nests in or about houses, on the face of cliffs and in caverns, the former usually tunnel a hole into bank, pit, or cutting, and make at the end of it a rounded chamber, in which they place a rough thick bed of straw, feathers, or other material. This lining is the only point in which their nests resemble that of their congeners.

The tunnel, which may be straight or sinuous, inclined upward or nearly horizontal, is usually two or three feet long, and it may be two to three inches in width, and double this in the terminal chamber. Generally most of the holes are to be seen extending in an irregular line along the upper part of the pit where the soil is soft. The number seen does not represent the number of nesting pairs. Some

are merely short tunnels abandoned on account of some obstacle—a stone or hard layer of grit—which impeded further progress. Others may be holes deserted, for one reason or another, after several years' use. Others, again, may be in the possession of sparrows. The total number of pairs in a colony may be a dozen or less, or a few hundreds.

Sometimes sand-martins are content with ready-made holes in walls or other places, but, as a rule, they prefer to excavate for themselves. The number of holes that are excavated in any given colony in any given year depends partly on the number of pairs that are nesting for the first time. The old birds return usually to their former holes and refurnish them. It depends, partly again, upon the nature of the earth in which the holes have been made, the softer and looser kind, such as sand, being of course more liable to slip than the harder and more compact. I have known the side of a sandpit give way and come down when some of the young were still in the holes. In the debris I found three nests and the bodies of five fledglings. There were probably more buried out of sight.

Before beginning definitely to excavate a hole, sand-martins appear to spend some time making what one may call very literally trial "scrapes" on the face of the cliff. They may be seen moving along its surface, the tail and wings pressed against it, while the feet all the while are scratching vigorously. "In this way a bird will sometimes crawl, or rather wedge itself, about over the pit's face (which, though it may be perpendicular or almost so, is yet full of roughnesses and inequalities), appearing to seek either the most yielding surface to scratch, or the best place to get fixed into whilst scratching; and in doing this it leaves a track on the sand or gravel which is quite perceptible through the glasses, and which, I believe, is made by the strongly bent-in tail as well as by the feet. It thus clings with wings, tail, and body whilst scratching, far more than clinging, with its claws."¹

There can be no doubt, however, that the bird makes use chiefly

¹ E. Selous, *Bird-Watching*, p. 327.

Plate 74

Sand-martins at their nest-holes

By G. E. Collins



CALIFORNIA

of its beak in the actual work of excavation, the feet being then used to scratch out the sand. Neither beak nor feet can be said to be specially adapted for digging and scratching, but they suffice. The same may be said of the beak of the bee-eater, which likewise makes burrows in sand, but which, unlike that of the sand-martin, is long and curved. It appears to be even less adapted for the purpose of excavation, if, as stated, the process has the effect of wearing it down to half its length.¹

The number of days it takes a pair to excavate and line a nest varies of course with circumstances. Normally they work only a part of each day, chiefly in the morning, but, as in the case of the other *Hirundinidae*, wet and windy weather delay operations. Much no doubt, again, depends upon the length of the hole and the hardness of the earth in which it is made. A pair has been known to tunnel a hole of 20 inches in forty-eight hours, but whether this was in soft earth, or was a case of emergency owing to the advanced state of the hen's ovaries, is not stated.² Another recorded period is sixteen days for a four-foot hole.³ More records are wanted in which the weather and other conditions are closely noted.

The sand-martin is one of the three British breeding Passerine species that lays white eggs, the other two being the house-martin and the dipper.⁴ The spots occasionally found upon the eggs are doubtless due to deposits by the fleas with which the holes are often infested. As Gilbert White observed, these pests "swarm at the mouth of the holes, like bees on the stools of their hives." But they are not, as he thought, bed-fleas. The sand-martin is privileged to have a flea of its own, and this is not the only parasitic insect it has to harbour.⁵

Whether both parents share in incubation is not yet certain, and is, in fact, owing to the position of the nest, very difficult to determine.

¹ Yarrell, *History of Birds*, ii. 440.

² Studer and Fatio, *Katalog der Schweizerischen Vögel*, Lief. ii. p. 185.

³ *Zoologist*, 1849, 2606 (J. J. Briggs).

⁴ See vol. i. p. 311.

⁵ Letter to Barrington, February 26, 1774.

There can, however, be no doubt that both feed the young, and that, like swallows and house-martins, they do so by regurgitating balls of insects. Their mouths contain the same viscid saliva, and in the mouth of one as many as nineteen insects have been found adhering at the same time.¹ When the young are big enough they come to the entrance of the nesting-hole, and, like young house-martins, keep watch for the return of their parents, and call for them almost incessantly in harsh twittering notes. As far as my observation goes, only one of the brood is fed at a time, the practice of sand-martins in this, again, resembling that of house-martins. When fledged, the young are fed in the air or on any convenient perch, and often, as before, at the entrance of their holes.

Those who have watched sand-martins, young or old, at their breeding-place cannot fail to have noticed a curious habit they have of clinging in a flock to the face of the cliff, not always motionless, but with short hoverings and flutterings, as if trying to scramble higher up, only suddenly, after a while, to fly off all together, and at the same time. These movements are independent of the ordinary passing to and fro to the nests of the birds engaged in feeding young. They are indulged in by those that have, so to speak, time for relaxation. The sudden flights off are, however, frequently joined by birds resting in or about the entrance to their holes. On one occasion (July 21) when I watched this play—for such it appears to be—I noted that a swallow, a young one, took part in it, his presence being taken for granted. There were no others of his species in view.

Mr. E. Selous has noted a similar play on the part of sand-martins when engaged in building their nests, and describes it as follows:—"We will suppose that the birds are now all working, either inside their tunnels or clinging to the face of the cliff. All at once, either at or about the same instant of time, they all fly off, darting away, and disseminate themselves in the sky, not one being left in or about the pit. In a few minutes they return, but . . . not in

¹ Macgillivray, iii. 599, 604; and above, p. 289.

nearly so instantaneous or simultaneous a manner; and this may be repeated for a greater or lesser number of times. . . . At the moment of each sudden exodus a certain number—sometimes about half—of these sand-martins will be more or less hidden within the holes they are excavating, yet out they all dart with the rest.”¹ Such simultaneous movements are common to many species of birds, and have yet to be explained.²

It is probable that the departure of a colony of sand-martins from its breeding-place is a gradual one, as some broods are more forward than others. It is certain that in July, instead of roosting in their nesting-holes, they begin to betake themselves to the reed and osier-beds to which they resorted on their arrival in the spring.³ Here they may be joined by other colonies, so that, toward the end of July or the beginning of August, the total number may reach thousands. The changes in the roost from reed-bed to nesting-place, and from the latter back to the reed-bed, is well illustrated by the following record kept by Mr. T. A. Coward of the arrivals and departures of sand-martins from the roost at Knutsford Moor, in Cheshire: ⁴—

Date.	Number roosting.	Date.	Number roosting.
1903. April 16, .	200	1904. April 5, .	11
„ „ 23, .	100	„ „ 11, .	200
„ May 4-12, .	300	„ „ 16, .	1000
„ „ 16, .	A few	„ „ 18, .	150
„ „ 18, .	None	„ „ 25, .	12
„ ———		„ May 3-9, .	300
„ July 2, .	Many	„ ———	
„ August 3, .	Several thousands	„ June 18, .	300-400
		„ „ 29, .	1000
		„ End July, .	Several thousands
		„ August 3, .	Under 50
		„ „ 9, .	Over 100
		„ „ 24, .	20

¹ *Bird-Watching*, p. 324.

² See above, p. 116.

³ Not all. Mr. Farren tells me he has found nests with young and fresh eggs in the second week of July.

⁴ *Fauna of Cheshire*, i. 189.

These valuable Tables, which might much more frequently be imitated, not only illustrate the immediate point, but also the variation in the dates of the bird's movements from year to year. On April 16, 1903, for instance, only 200 were roosting, whereas on the same date of the next year there were a thousand. Again, on August 3, 1903, there were several thousands at the roost; but on the same date in 1904 the thousands had already set forth on their southward migration, leaving a mere remnant of fifty to follow. More striking still is the difference between the numbers at the beginning and the end of the season, between the number that leave us in the autumn and return to us in the spring—a difference representing an appalling mortality.

Sand-martins, like their congeners and other species, notably starlings, perform aerial evolutions before descending to their roost in the reeds. They race about the sky in twittering bands, and then, at a given moment, mount upwards, whirl this way and that, and on a sudden fall like a shower into the reeds. Sometimes, instead of settling down at once, they “skim to and fro in the waning light, with rapid flight, just above the reeds, into which they suddenly and imperceptibly vanish,”¹ the only sign of their presence being the twittering that continues for a time.

This twittering song, pleasant enough when heard under such circumstances, refined as it is by distance and the romance of the twilight, is in itself of no great merit, and much inferior to that of the swallow. In addition to its song, the bird has an ordinary low chirp, and a louder, more penetrating cry of anger or alarm. These probably do not exhaust its vocabulary, which has yet to be closely studied.

Like swallows and house-martins, the present species suffers from the attacks of the swifter hawks, their chief enemy being, according to Naumann, the long-winged, quick-flying hobby (*Falco subbuteo*), the terror of all the *Hirundinidæ*.² Stoats sometimes succeed in getting

¹ T. A. Coward, *op. cit.*

² *Vögel Mitteleuropas*, iv. 220.

into their nesting-holes.¹ If these are over water they are better protected from such visitors, but, on the other hand, are occasionally liable to be flooded. As is the case with their congeners, many perish if a spell of cold weather follows their arrival on our shores in the spring; and, like the house-martin, they are subjected to persecution by sparrows. Both the house-sparrow, the tree-sparrow and the starling may be found in possession of the nesting-holes. They occupy them with impunity—for sand-martins, though they combine to harry a sparrow-hawk,² have not yet learned to chase from their midst this much less formidable foe.

¹ H. A. Macpherson, *Fauna of Lakeland*, p. 131.

² Macgillivray, *History of Birds*, iii. 602.

THE WOODPECKERS

[ORDER: *Coraciiformes*. FAMILY: *Picidæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. B. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON]

GREEN-WOODPECKER [*Picus viridis* Linnæus. *Gecinus viridis* (Linnæus). Yaffle, hewhole, witwall, woodwall, yaffingale, woodnacker, rainbird. French, *pic vert*; German, *Grünspecht*; Italian, *picchio verde*].

1. **Description.**—The green-woodpecker cannot be compared with any other British bird, since it is the only species which is wholly green in colour save for a bright crimson patch on the crown. The sexes are alike, and there is no seasonal change of plumage. (Pl. 76.) Length, 12 inches [350 mm.]. The adult male has the crown and nape rich crimson, and a similar red patch in the centre of a black malar stripe. The lores and a patch round the eye are also black. The rest of the upper parts are of a light sap-green, passing into golden yellow on the rump. The wings are of a darker bronze-green, the secondaries with almost imperceptible dark bars. Only the outer webs of the secondaries are bronze-green, the inner webs being dusky. The primaries have the outer webs chequered black and white, but on the innermost feathers the white is replaced by green. The tail feathers are black, with greenish bars on the outer webs, but the two middle feathers are barred with greenish grey. The under parts are pale sap-green, the feathers on the lower breast and abdomen with darker, indistinct margins, while the under tail-coverts are greenish white, with subterminal margins of dark slate. The iris is pearly white. The female differs from the male only in being slightly duller and lacking the red bar in the malar stripe. The juvenile plumage is as characteristic as the adult, the dominant hue being green, while the crown is grey flecked with crimson—the red being less well developed than in the adult. The upper parts are of a dark sap-green, each feather having a double bar of dark green, and

a subterminal irregular transverse bar of greenish white, forming diamond shape spots. The rump is barred black and white, and washed with golden yellow. The wings are as in the adult, but duller, and having whitish spots on the coverts. The side of the head, neck, and fore-breast are white, streaked on the sides of the head and neck, and barred on the flanks, hind-breast, and abdomen with dusky bars, inclining to form chevrons. The abdomen is tinged with yellow. [W. P. P.]

2. Distribution.—Resident in England and Wales, as well as on the Continent up to about 63° N. lat. in Norway and S. Petersburg in Russia, but replaced by allied forms in the Iberian Peninsula, North-west Africa, South-eastern Russia, and Persia. In England it is fairly general in well-wooded districts, and in some places common, throughout the southern counties, and up to the foot of the Pennine Range. On the east side of the Pennines it is very local, but not uncommon in parts of Yorkshire, and is resident in small numbers in Northumberland and Durham, while on the west side it is only known as a rare casual visitor to Cumberland and Lancashire. In Wales, on the other hand, it is plentiful in many localities from Pembroke to Merioneth, and nowhere rare. In Scotland it has occurred once or twice, and has not been obtained in Ireland since 1854. [F. C. R. J.]

3. Migration.—Resident. In addition to a certain amount of local wandering in autumn, there is some evidence of a general movement towards the south of England, inasmuch as the species appears to become rather commoner in Kent on the approach of winter (cf. Ticehurst, *B. of Kent*, 1909, p. 232). But any movements that may exist must be practically confined to the breeding-area, for the species is very seldom recorded beyond it: there are only a very few records from Ireland and Scotland (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 107; Saunders, *Ill. Man. B. B.*, 2nd ed., 1899, p. 273; and Gladstone, *B. of Dumfriesshire*, 1910, p. 156). On Heligoland the species has occurred once (cf. Gätke, *Vogelwarte Helgoland*, Eng. trans., 1895, p. 426). [A. L. T.]

4. Nest and Eggs.—The nesting-hole is bored directly into the trunk of a tree, and then descends perpendicularly for about a foot or so, ending in a roughly rounded chamber. Occasionally an old hole is used for some years successively, but generally a new one is made annually. In a few cases a natural cavity is enlarged and deepened, but this is exceptional. The height above the ground is very variable, some nests being less than 3 feet above it, while others may be as much as 30 or 40 feet high. Records of the share of the two sexes in nest-boring appear to be lacking. Fragments of wood are left lying beneath the nesting-place. The eggs, generally 5-7 in number, rarely 8, are laid on a bed of chips of dead

wood, and are pure glossy white in colour, somewhat variable in shape, with fine grain, and show the yolk distinctly when fresh. Occasionally, however, eggs may be met with which have been stained by moisture acting on the wood, and show various tints of yellow or rich red-brown. If the eggs are gradually removed, the hen may be induced to lay large numbers of eggs, and 14 have been taken on consecutive days from one hole. (Pl. XXXII.) Average size of 100 eggs, 1.24 x .91 in. [31.64 x 23.14 mm.]. The normal breeding season is probably about the end of April or early in May; but so many of the first nests are appropriated by starlings, that in some districts it is almost useless to look for eggs till late in May or early in June. Incubation lasts about 16-18 days, and, according to Bau, the hen is relieved by the cock from 10 A.M. to 2 P.M. E. T. Booth notes that three out of four shot from the nest proved to be males, and W. Farren has found the male on the nest after 5 P.M. Only one brood is reared during the season. [F. C. R. J.]

5. **Food.**—Young fed by both parents by regurgitation. The adults feed by preference on ants, but all kinds of insects are eaten, as well as nuts and wild fruits. [W. P. P.]

6. **Song Period.**—Messrs. C. J. and H. G. Alexander state that the full laughing cry, which they take to be the song, is only uttered from January to late summer and not in autumn: this species also drums, but apparently not often (*Br. Birds*, iv. 276). [F. C. R. J.]

BRITISH GREAT SPOTTED-WOODPECKER [*Dendrocopus major anglicus* Hartert. French magpie, woodpie, woodwall].

1. **Description.**—The black upper parts relieved by white patches on the cheeks, side of the neck, and scapulars, and the red of the lower abdomen and under tail-coverts at once distinguish the great spotted-woodpecker. (Pl. 75.) Length, 10 in. [255 mm.]. In the male the upper parts are of a glossy blue-black, relieved by a band of buff across the forehead, a band of crimson across the occiput, a large white patch below and behind the eye, and on the side of the neck. The scapulars and the coverts over the region of the elbow form yet another white patch, and the remiges bear white spots on their outer webs, forming transverse bars in the closed wing. The tail has the four middle feathers black, the rest white barred with black to within a short distance of the bases which are black. The under parts are of a dull buff colour, save the lower abdomen and under tail-coverts which are crimson. The female differs from the male in lacking the crimson patch on the occiput. The



Photo by E. L. Turner

Green-woodpecker at the entrance to its Hole



Photo by E. L. Turner

Green-woodpecker looking out of its Hole

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juvenile plumage differs from the adult in that the *crown* of the head is crimson in both sexes—though in young females the crimson area is smaller—and in that the black areas of the plumage lack brilliancy. [W. P. P.]

2. Distribution.—Our British local race is confined to Great Britain, where it is resident. It is tolerably general in all wooded districts of the southern and midland counties of England, though of course absent from the treeless moorlands and plains; while in Wales it is commoner than is generally supposed, but is absent from Anglesey. In the northern counties of England it becomes scarce, though increasing in Lakeland; while in Scotland its distribution has fluctuated considerably. For details, see J. A. Harvie-Brown, *Ann. Scot. Nat. Hist.*, 1908, p. 209 (with Map); W. Evans, *t.c.*, p. 216; and *British Birds*, ii. p. 238, etc. Briefly, it must formerly have bred in some numbers up to the Moray Basin, but gradually disappeared, while of late years a considerable increase in its range has taken place, originating in the south-east, where a few pairs appear to have been always present. It has not been known to breed in Ireland. On the Continent of Europe and in Asia it is replaced by various geographical races, one of which, the northern great spotted-woodpecker, *D. major major* (L.), also visits us on migration. [F. C. R. J.]

3. Migration.—Resident. The birds wander considerably in winter, and slight seasonal movements within our area may possibly exist (cf. Ticehurst, *B. of Kent*, 1909, p. 234). But the movements across the Irish Sea are probably extensions of the general winter immigrations of the northern great spotted-woodpecker (*q.v.*). The two races are so seldom distinguished in the available records, that it is impossible to separate their respective movements with any degree of certainty. [A. L. T.]

4. Nest and Eggs.—The nesting-hole, bored in the trunk of a tree in a similar way to that of the green-woodpecker, but on a smaller scale, is usually made at a considerable height. When undisturbed, a new hole is frequently bored a foot or so below that of the previous year, and sometimes an old trunk may be seen which is simply riddled with holes. Almost any kind of forest tree is utilised, but the nest is seldom less than 15 or 20 feet from the ground. Whether both sexes take part in excavating the hole, or it is the work of the male bird alone, appears to be uncertain. As in the case of the other members of this family, no nesting material is used, and the 5 or 6, rarely 7 or even 8, eggs are laid on the chips of dead wood at the bottom of the hole. They are glossy white, sometimes with a creamy tinge, and transparent before being blown. Average size of 59 British

eggs, $1.03 \times .76$ in. [26.28×19.47 mm.]. When undisturbed by starlings, the eggs are generally laid from about the 12th to the 20th of May, but the first nest is often forcibly taken over, and the woodpeckers compelled to begin housekeeping anew. Incubation is performed by both sexes, and lasts about a fortnight (Saunders), while a single brood only is reared during the season. [F. C. R. J.]

5. Food.—The adults feed mainly on insects, but also, in the autumn, on fruit and ants, acorns, beech-mast, and seeds of conifers. The young are fed by both parents on insects brought in the beak. [W. P. P.]

6. Song Period.—Messrs. Alexander (*Br. Birds*, iv. 276) state that the call-note is very seldom uttered: the song is represented by the drumming noise, which is not heard in the autumn. The sharp *chink* or *chik* is, in my opinion, only used as an alarm note. [F. C. R. J.]

NORTHERN GREAT SPOTTED - WOODPECKER

[*Dendrocopus major major* Linnæus. French, *pic épeiche*; German, *grosser Buntspecht*; Italian, *picchio vario maggiore*].

1. Description.—Differs from the British Great Spotted-Woodpecker only in its size, more powerful beak, longer wing, in which the first primary is conspicuously longer than the primary coverts, and paler—less brownish—under parts. [W. P. P.]

2. Distribution.—This is the representative form of Great Spotted-Woodpecker in the forests of Scandinavia and Northern Russia, where it breeds up to about 70° N. lat. in the former country, and about 64° N. in the latter, while southward its breeding limits extend to East Prussia. In the rest of Continental Europe, the Canaries, Corsica, and Sardinia, and the greater part of temperate Asia it is replaced by allied sub-species. [F. C. R. J.]

3. Migration.—A winter visitor regularly in small numbers to the more south-easterly portions of Great Britain, and at irregular intervals in comparatively large numbers and over a wider area. A few occur annually, chiefly from September till November, along the east coast of Great Britain from the line of the Grampians southwards to Norfolk. But at intervals of a few years larger immigrations occur, and these are usually very well marked in the northern and western Scottish Isles. The Faeroes have also been visited. Winters in which such influxes have occurred are 1861, 1868-9, 1886-7, 1889, 1901-2, while records from the Scottish Isles were rather numerous in 1909 (cf. Harvie-Brown, *Ann. Scot. Nat. Hist.*, 1908, p. 214 ;

Baxter and Rintoul, *op. cit.*, 1910, p. 203; and Nelson, *B. of Yorks.*, 1907, p. 275). Great spotted-woodpeckers occur irregularly in Ireland, especially on the coast of Down and other eastern counties, and chiefly "in the last quarter of the year" (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 108). As already stated, these probably belong to this form, although no Irish specimens have as yet been determined as regards race. Among the grounds for this supposition is that Irish records are particularly numerous for certain seasons—*e.g.*, the winters 1886-7 and 1889-90—which correspond with those of the special immigrations mentioned above. On Heligoland the species is very uncommon, but a strong migration was noticed in October 1889, corresponding to one of those mentioned above (cf. Gätke quoted by Cordeaux, *Naturalist*, 1890, p. 7). On the East Baltic (Kurische Nehrung) this bird also occurs in specially marked migrations, chiefly of immature birds, at irregular intervals; *e.g.*, in the autumns of 1903 and 1909 (cf. Thienemann, *Journal für Ornithologie*, April 1904, and July 1910, pp. 559-60). A solitary traveller. [A. L. T.]

LESSER SPOTTED-WOODPECKER [*Déndrocopus minor* (Linnæus). Barred-woodpecker. French, *petit épeiche*; German, *kleiner Buntspecht*; Italian, *picchio piccolo*].

1. Description.—The lesser spotted-woodpecker may at once be distinguished by its small size and the white, black-barred back. There is no seasonal change of plumage. (Pl. 75.) Length, 6 in. [152 mm.]. The adult male is distinguished by its crimson crown. The forehead is dark brown. There is a black malar stripe and a black superciliary stripe extending backwards to form a broad triangular black patch on the nape, which is continued backwards along the back of the neck to the interscapulars which, with the scapulars, are also black. The rest of the back is white, barred with black. The sides of the head and neck are white. The wings are black, but the median and major coverts have broad subterminal bars of white; the remiges are also black, with large spots of white on both outer and inner webs, so that, in the closed wing, a series of 5 or 6 distinct transverse bars of white are formed. The median tail feathers are wholly black, the outer black at the base and the rest white barred with black. The under parts are white, but the forepart of the flanks are marked by narrow, sharply defined striations. The female differs from the male in having a whitish, instead of a crimson crown. The juvenile plumage resembles that of the adult, the male having a crimson crown though less well developed than

in the adult; and the female also has more or less crimson on the crown, but confined to the forepart, therein differing conspicuously from the adult female. The rest of the plumage differs from the adult only in that the black of the upper parts is duller, while the under parts are of a dull buff, and the striations are blurred brown instead of black, and formed by short instead of long streaks. [W. P. P.]

2. Distribution.—Our British race of this species, *Dendrocopus minor comminutus*, Hartert, is confined practically to England and Wales. It is a fairly common resident in the southern counties, especially in the Thames valley, but becomes scarce in the north midlands, and is decidedly local in Wales. It nests regularly in small numbers in Yorkshire, but seems to be of rare or only casual occurrence in the other northern counties of England and on the southern border of Scotland. The statements of its occurrence in Ireland require corroboration. On the greater part of the European continent, as well as in temperate Asia and the Azores, it is replaced by several other geographical races, which are to some extent migratory. [F. C. R. J.]

3. Migration.—Resident: and apparently quite non-migratory apart from the mere local wanderings which occur in autumn (cf. Ticehurst, *B. of Kent*, 1909, p. 235). Outside its breeding-area the species only occurs very exceptionally, but there are a few records from Ireland and from the south of Scotland (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 109; Gladstone, *B. of Dumfriesshire*, 1910, p. 161, etc.). [A. L. T.]

4. Nest and Eggs.—Like the other woodpeckers, this species bores a hole in some species of tree—poplars, willows, oaks, chestnuts, birches, hollies, elders, whitethorns, or old apple-trees—but generally chooses a spot where the wood is decayed and easy to work. The height above the ground is very variable, sometimes 30 to 40 feet high, and again sometimes only a few feet up. Chips are generally left below the nest-hole, which is small, and neatly rounded, $1\frac{1}{4}$ in. in diameter. The work of excavation is said to be performed by the male only. The eggs are white, 4-7 in number, thin-shelled, and more transparent and ivory-like in texture than those of the wryneck. They are said also to have a slight creamy tinge. Average size of 51 British eggs, $\cdot73 \times \cdot56$ in. [$18\cdot57 \times 14\cdot25$ mm.]. The breeding season begins about May 12, but fresh eggs may be found till early in June. Naumann states that both sexes of the Continental form take part in incubation, which lasts 14 days. Only one brood is reared in the season. [F. C. R. J.]

5. Food.—Feeds entirely on insects of various kinds. Young fed by both parents on insects brought in the beak. [W. P. P.]

6. Song Period.—Probably the drumming noise represents the song of the species, but Messrs. C. J. and H. G. Alexander note that the repeated call-note is not heard late in summer, when the birds are presumably moulting (*Br. Birds*, iv. 275). [F. C. R. J.]

The following species is described in the supplementary chapter on "Rare Birds":—

[Great black-woodpecker, *Dryocopus martius* L.]

THE WOODPECKERS

[W. P. PYCRAFT]

Of our resident birds the dipper and the woodpeckers are among the least familiar, since of necessity their existence depends on local conditions, limiting migration and restricting distribution. By force of circumstances they have become unfitted for a wandering life, and on account of these same limitations of liberty the ornithologist finds in these birds an interest which is peculiarly stimulating, inasmuch as they bring home, in striking fashion, the close relationship which exists between structure and environment, a relationship by no means so obvious in birds which enjoy a wider field of life. The woodpeckers, indeed, are unsurpassed in the number of the problems they present, some of which it is the purpose of this chapter to analyse.

Take the matter of distribution, for example. Why is it that no woodpecker breeds, or has been known to breed, in Ireland? Why is it that Scotland is almost as completely avoided? In both these areas there would seem to be suitable harbourage; but the fact remains that, either on account of climatic conditions, or a lack of suitable food, Ireland and Scotland alike are shunned by these interesting birds. Scotland, however, is more fortunate than Ireland, since one species—the great spotted-woodpecker—in former times nested as far north as the Moray Basin, and still breeds in the south-east. Happily the bird seems to be recovering its lost ground, and speedily. This avoidance of the Scottish area is curious, since this species evinces a preference for coniferous trees.

The green-woodpecker, in the matter of its haunts, shows a decided preference for light sandy soils, which afford the best harbourage for ants and their nests, while in the matter of trees it affects a preference for old and decaying oaks, probably because the gnarled bark affords abundant lurking-places for insects; other trees, and especially

those of rough bark, like elms, poplars, and apple for example, are also closely explored. The larvæ of timber-haunting beetles, ants, spiders, caterpillars, and other forms of insect life swarm in these bark crannies, and, it has been remarked, especially on the under side of the branches. Sterland, indeed, in *The Birds of Sherwood Forest*, insisted that this bird, when feeding, confines its examination to those parts of the tree, but this is too sweeping a statement, as is shown indeed by the fact that the great fat larvæ of the goat-moth (*Cossus ligniperda*) are largely dug out from their retreat in the trunks of decaying trees. Montagu,¹ referring to the fact, remarks that the pungent smell peculiar to this larvæ is imparted to the bird at least temporarily. But the green-woodpecker is not singular in this respect, for the greater spotted-woodpecker, at any rate, has also a curious and strong smell, at least as a rule. In this connection it is interesting to notice that a Paraguayan species of woodpecker (*Picumnus pilcomayensis*) is said² to possess a peculiarly offensive odour, such as arises from a place infested with cockroaches, but much stronger: and so lasting is the odour that it may be traced, even in skins, for years. We may surmise, then, that this odour is due, not, as has been supposed, to an internal glandular secretion of the bird, but to the fact that this particular woodpecker obtains its staple food from some offensive-smelling insect.

The passage from tree to tree is made with a curious undulating flight, and in alighting the bird will often contrive to come to rest on the *under* surface of a bough, then to commence its search afresh, working from the lower part of the tree upwards, and ascending spirally, but generally they alight in the trunk. Having gained the topmost branches, it does not descend after the fashion of the nuthatch, but flies off to a fresh tree, or, describing a wide circle, returns to the same tree.

Though the woodpeckers might be supposed to represent the most adept of all climbing birds, this is not really the case,

¹ *Ornithological Dictionary*.

² *Ibis*, 1910, 285.

inasmuch as neither this, nor any other of its congeners, seems to be able to accomplish the feat of climbing *down* the tree, progressing head foremost, a method of locomotion which the little nuthatch performs with ease, though the feet, be it noted, do not display the highly specialised character seen in those of the woodpeckers. For short distances, however, they will often descend backwards, by a series of backward, jerky hops.

The beak of the woodpeckers is of unusual density, and in shape recalls a pick-axe, characters which one might assume to be due solely to the requirements of the capture of food. But, as our native woodpeckers show, this is not actually the case, for though on occasion bits of bark are hewed from trees in the search for insects, as a rule no such violent measures are necessary, their defenceless victims being seized by the action of a protrusible tongue, barbed at the tip, and coated with a glutinous saliva. But to these points we shall return presently. For the moment we are concerned with the nature of the food, which consists mainly of insects, though during the autumn nuts and fruit are also eaten. It is a moot point whether stores of nuts for winter consumption are laid up, as in the case of the Californian woodpecker (*Melanerpes formicivorus*), which is said to combine in considerable numbers in harvesting acorns, inserting them in holes drilled for the purpose in oak-trees. But the Rev. F. C. R. Jourdain tells me that he has found stores of oak galls laid up in neatly bored holes on Cannock Chase, and these he thinks must have been placed there by woodpeckers. If there be doubt as to the storing habit, we are certain that our birds do not indulge in the reprehensible practice of stealing the eggs and young of other birds, as in the case of another American species, *Melanerpes erythrocephala*, which has been known to wipe out a whole colony of swallows, and which further varies its diet by eating frogs! That this particular species has departed a long way from the habits of its tribe there can be no doubt, but the causes which induced so strange a change seem beyond discovery.

And now let us return to the matter of the density of the beak. We have already hinted that on occasion a weapon such as it is of the greatest service in dislodging insect larvæ buried in the trunks of more or less decaying trees, but insect prey of such a kind does not form the staple diet of these birds, hence we cannot trace the peculiar density of the beak-sheath to its occasional use for such a purpose. It would seem, then, that we must ascribe such a structural peculiarity to the fact that these birds choose as their breeding-places the interior of trees which, while hollow at the core, have more or less sound wood externally, which must be hewn away before the desired cavity can be reached.

The green-woodpecker, in searching for a nesting site, will commence many borings before finding a suitable site: and in the work of excavation it displays a certain amount of individuality. Some will elect to establish a nursery at not more than three feet from the ground, but as a rule they ascend some twenty feet, and will sometimes return to the same hole in successive years, even in cases where the original entrance has been enlarged by human agency.

Some birds take the precaution to carry away the tell-tale chips which have fallen to the ground during the work of excavation, but this display of caution appears to be the exception rather than the rule. A tree is always selected which is decayed at the core, though more or less sound wood may surround that cavity. It is probably when the sound wood is thicker than estimated that holes which have been cut for some distance are eventually abandoned. But when once the work is in full swing, the first or horizontal portion of the tunnel is soon completed, then it takes a sudden downward turn, descending about twelve inches, the eggs being deposited on the rotten wood at the bottom without any further preparation for their reception. Laborious as this work of tunnelling must be, it is yet performed with remarkable speed. Mr. J. E. Harting¹ on one occasion kept a pair of these birds under observation during the whole of this im-

¹ Harting, *Birds of Middlesex*.

portant period. The selection of the site seems to have been determined on at 5 A.M. on a Friday, when the female alighted on an oak about ten feet from the ground, picked off a piece of bark of the size of a shilling, and flew away with it. This manœuvre was several times repeated, when both birds began the serious work of boring. Within the space of some forty-eight hours they had completed their task, having drilled a tunnel two inches long, and sunk a shaft of eight inches deep during this time, for when the work was examined at 7 A.M. on Sunday, one egg was found at the bottom of the nest.

Since woodpeckers are more abundant in the southern parts of our islands than elsewhere, it might seem that climate was the determining factor in the distribution, but Ireland compares favourably in this respect with southern England, and would seem in every way as suited to the needs of the birds. Yet such is evidently not the case.

That the woodpeckers are restricted as to habitat is obvious from the structure of the feet, which are of the type known as "zygodactyle"—two toes being turned forwards and two backwards—an arrangement which obtains only among birds of arboreal habits. Nevertheless, though feet of this type are essentially climbing feet, they do not prevent locomotion on the ground, and one at least of our native species—the green-woodpecker—is commonly to be seen on the ground during the summer months, eagerly hunting in gardens and pastures in the neighbourhood of trees for ants' nests, on the tenants of which it preys greedily. At such times the carriage of the body is strangely upright, and progress is made by a series of awkward hops. It is interesting to note, in this connection, that Darwin, in the *Origin of Species*, chapter vii., cites the case of a woodpecker (*Colaptes campestris*) which, while possessing all the characters of typical woodpeckers, yet lives in the plains of La Plata, where hardly a tree grows, so that it has to make its nest in the holes of banks: while the same seems to be true of *Geocolaptes olivaceus* in South Africa.¹ These

¹ Newton, *Dictionary of Birds*, pp. 259-60.

hunting raids on the part of the green-woodpecker aside, our British woodpeckers are all strictly arboreal birds, but their choice of trees, and their methods of climbing, differ somewhat. As much, indeed, might be expected, for thereby undue competition is avoided.

According to Yarrell, beech and oak trees are rarely selected by the green-woodpecker as breeding sites, elm, ash, poplar, horse-chestnut, sycamore, and silver-fir being the more favoured. This supposed avoidance of oak-trees, however, is not borne out by facts. He also remarks that the work of excavation is begun by a vertical incision which is soon enlarged to a circle, the tunnel being then driven towards the heart-wood, and descending for about twelve inches, is then enlarged to form a chamber, on the floor of which the eggs are laid. The same tree, he says, may be used for an indefinite period—as long as thirty years—but a fresh tree is generally selected each year. He makes the further interesting observation that the old holes are used as sleeping-places. Mr. Edmund Selous, however, inclines to the belief that it sleeps “clinging perpendicularly to the trunk of a tree.”¹

Having regard to the large size and powerful beak of this bird, it seems incredible that, after having successfully excavated a nursery, it should allow itself to be dispossessed by another bird, even of its own size. Yet the starling commonly ousts it, as has already been shown,² and it will even allow itself to be driven away by the little nuthatch!³ Occasionally, as might be supposed, it disputes possession with its relative the greater spotted-woodpecker.

The young, as with all the woodpeckers, have no down, so that when the feathers sprout the body recalls that of a porcupine! The manner of their feeding seems to vary. At any rate, so far as observation has gone, it would seem that while the green-woodpecker feeds its offspring by regurgitation⁴—that is to say, on partially digested food—the greater and lesser-spotted species administer food in its raw

¹ *Bird Life Glimpses*, p. 237.

² See under “Starling,” vol. ii. p. 126.

³ Bosworth Smith, *Bird Life and Bird Lore*, p. 405.

⁴ Selous, *Bird Life Glimpses*, p. 217.

state. Both species, at any rate, have been seen to enter their nesting-holes with beakfuls of flies and other insects.¹ The evidence as to regurgitation so far produced is not convincing, and rests on statements that have been made to the effect that the green-woodpecker at any rate has been seen at the entrance to the nest, apparently endeavouring to pump up from its internal recesses the necessary pabulum, which eventually appears oozing from the corners of the bird's mouth in the form of a cream-like substance. But it may well be that the insect food is conveyed to the young in form of a bolus, as in the case of the wrynecks (*q.v.*) and of rooks.

The young of the green-woodpecker presents one feature hitherto not recorded of either the great or lesser spotted species, or of the wryneck. This, first described by Mr. J. H. Gurney,² is found in nestlings when but a day or two old. Herein the lower jaw, on either side of the gape, bears a large prominent knob, quite round and hard, like a pea. As the bird grows the knob diminishes, and has almost disappeared by the time the bird leaves the nest. It does not appear that any similar structure is found in other species, but nevertheless it may be found when specially sought for. They proclaim their presence in the nest, if the tree be struck, by loud, serpentine hisses,³ designed, unconsciously, to drive away marauders, and probably, in most cases, the ruse is successful. From the Rev. F. C. R. Jourdain I gather that the presence of young may often be detected by a curious "wail" or "squeal" uttered in chorus when they are hungry. And this is true also of the greater spotted species. The heat inside such a nesting-chamber, as may well be imagined, is stifling, so that it is not surprising to find that as soon as they are able the occupants climb out into the branches in the neighbourhood of the nest-hole, into which they scuttle on the slightest alarm. Of the sanitation of the nest no records seem to have been made, that is to say, we have yet to

¹ E. Selous, *Bird Watcher in the Shetlands*, 302 (lesser spotted); F. C. R. Jourdain, *in litt.* (greater spotted).

² *Zoologist*, 1901, 120.

³ According to Bosworth Smith, *Bird Life and Bird Lore*, p. 410.

Plate 75

(Left) Lesser spotted-woodpeckers at their
nest-hole. The upper bird is the male

(Right) Greater spotted-woodpecker (male)
about to feed nestlings

By A. W. Seaby



learn whether the faecal matter is removed by one or both parents, or whether it is absorbed by the rotten wood on which the young rest.

So far nothing has been said of the courtship, or of the peculiar features of the coloration of the green-woodpecker, and this because it seems advisable to consider these facts in comparison with the greater and lesser spotted-woodpeckers. Before we enter upon these phases of the life-history, however, it would be well to briefly compare these two species with the green-woodpecker in regard to their general haunts and habits.

The greater spotted is, to begin with, less common in our islands than the green-woodpecker, and seldom, if ever, haunts the same spots, showing a preference for oak woods, hedgerows with large ash-trees, small plantations of poplar and alder, and the lines of pollard willows skirting rivers. It is a shy and solitary bird, preferring smaller trees and the upper branches rather than the trunk. Further, it is but rarely seen on the ground, for it does not make ants its prey, though insects form its chief diet. In the season, however, it will hunt orchards for cherries and other fruit, while in the autumn the diet is varied by the addition of acorns, beech-mast, the seeds of conifers, and the berries of the mountain ash. As a climber it is in no way inferior to the green-woodpecker, and in evidence of this we may cite Mr. J. H. Gurney,¹ who relates of a pair in a cage at the Gardens of the Zoological Society, that they were fond of traversing the wire top of their cage back downwards, *not* after the ordinary fashion of climbing, but by a series of hops, an action so curious that he would not have believed it possible if he had not seen it.

According to Mr. Abel Chapman,² the great spotted-woodpecker, at any rate on the northern confines of its range in Great Britain, prefers coniferous woods. Some individuals, however, select as breeding-places, he says, deciduous trees—birch, ash, elder, alder, and wych elm, and always those which are rotten at the core. If one tree

¹ *Zoologist*, 1901, p. 129.

² *Bird-Life of the Borders*, p. 133.

is occupied year after year, as is often the case, it becomes completely hollowed out, and has one or more entrance holes, each as round as if bored with an augur. He kept a pair under observation while constructing their nursery. They chose a silver birch broken off some thirty feet from the ground, and several trial holes were made before the nest-hole was finally bored, two-thirds from the top of the tree. The lawn was littered with chips. Boring began on Friday, May 24. On Saturday the hole was deep enough to conceal the borers; on Sunday they worked the whole day, bringing up beakfuls of excavated material and ejecting it into the air. They worked so hard, that after each discharge the birds would cling, gasping with open beak at the entrance. By the 28th their labours were finished. Finally, he remarks, young were first heard in the hole on 25th June, by 7th July they had left the nest and vanished.

Mr. H. E. Howard¹ has made some particularly interesting observations on the habits of this bird when feeding, inasmuch as he points out that, in common with many—and it may be with all—other species, it displays a perfectly mechanical method of hunting for food, since it returns again and again to the same spot for food, having regular rounds, wherein certain trees are visited in a definite order daily.

In its general habits the lesser spotted-woodpecker differs, as one would suppose, in no very striking particulars from its larger relatives; and such differences therein as are to be detected are differences calculated to avoid competition with its relatives. It seems to be generally agreed that when in search of food it displays a greater partiality to tall trees, and in particular to elms, than its larger relative; nevertheless squabbles for desirable nesting sites between the two take place wherever both species occupy the same area. On occasion, however, it descends to the ground to search among the long grass for insects lurking there. In its choice of a breeding area, however, it appears to prefer orchards, pear and apple

¹ *British Warblers*, p. 29, Part 2.

trees being especial favourites. The nest is dug in the stem or a big branch, as circumstances determine, the hole varying from seven to fourteen inches deep, the eggs being laid, according to the traditions of its tribe, on the decayed wood at the bottom, without any preparation for their reception.

As to displays associated with courtship, we know practically nothing as regards the woodpeckers. But Mr. H. E. Howard¹ makes a passing reference to the display of the lesser spotted-woodpecker, which, like the chiffchaff, the blue-tit, and hedge-sparrow, "will float towards his mate through the air like a big moth, with outstretched, slowly-flapping wings"; or will approach in semicircles, beating the air with a peculiarly slow movement of the wings. In a recent letter to me, he kindly adds the following note:—"When mating the call-note is similar to that of the greater spotted-woodpecker, but is uttered more softly. I have seen both sexes quite close to one another on a tree trunk, the male uttering the call-note and occasionally tapping, very slowly, on the trunk. In response, apparently, the female utters the usual call-note of the species. Then follow the aerial evolutions first referred to."

Mr. O. H. New² once saw a male, of the greater spotted species, settle on a dead bough above the nest-hole and engage in comical sideway jumps, at the same time peering cautiously about him. Later both birds danced about on the trunk and branches of the nest-tree and directly after paired.

Concerning the green-woodpecker at this period of its life-history, we have a few notes by Mr. Edmund Selous,³ but they are very inconclusive, and evidently afford only a slight insight into what takes place, though doubtless in due time he, or another, may be able to fill in the missing phases. Mr. Selous had the good fortune to watch two males which, facing one another on the ground, seemed at first to be engaged in play, but presently they closed in an angry scuffle,

¹ *British Warblers*, Part II. (under Chiffchaff).

² *Zoologist*, 1901, p. 95.

³ *Bird Life Glimpses*, p. 225 *et seq.*

each seizing the other by the beak, when they pulled, and tugged, and swayed about for some time, occasionally leaping into the air, and sometimes making thrusts at one another with the points of their beaks. But no great damage was done during the encounter. Since these birds apparently pair for life, it would seem that such battles, when they occur, are waged in the defence of territory, and are not necessarily annual occurrences. Mr. Selous specially comments on the fact that this encounter took place on the ground, and he is further inclined to believe that in the matter of pairing the female is the first to make advances towards the male, as happens among some other birds. But this reversal of the usual order of things is generally regarded as occurring only in polyandrous species, like the turnices and tinamous for example, and in such cases the female is furthermore more brightly coloured than the male. To these published notes I may add the following communication to me by my friend Mr. W. Eliot Howard in the letter already referred to. He remarks, in regard to the courtship, "all that I have seen in the case of the courtship of the green-woodpecker was on an occasion when a pair settled on a tree trunk near one another, and flirted their tails after the manner of the kingfisher, the tail being raised very considerably during the proceeding, but I don't remember to have seen it spread."

While, in regard to their cries, the woodpeckers are not more remarkable than many other birds, they perform a kind of instrumental music which is peculiar to their race, of which more presently. They have no song, in the usual sense of the term, but the green-woodpecker is a performer of unusual merit among his kind, affording a theme for essayists and poets from time immemorial, while even the less gifted among men have, in one form or another, marked their appreciation of its peculiar strains. The notes in question have been aptly described as forming a peculiarly cheerful, laughing call, which can only feebly be recorded by human speech, and still more feebly in printed words as *pleu, pleu, pleu*, several times repeated—a colourless rendering, indeed, to all who have heard these wild and joyous

sounds uttered in the open air. Almost throughout the year these notes may be heard, and are commonly, but we need hardly say erroneously, held to foretell rain. Gilbert White and others have likened these sounds to human laughter. The widespread attention which these notes have attracted have earned for this bird the names of yaffle and yaffingale. But the green-woodpecker has a considerable variety of cries; one very harsh and loud, apparently uttered by the male in early spring, has been syllabled *tiacacan, tiacacan*, and this is, perhaps, a note of defiance to rival males, or a warning to trespassers of his race that his territory is being invaded; while during the nesting season a peculiarly mellow series of notes, quite indescribable, are uttered. According to Bailly, at the end of March this bird utters an amatory note like *tio, tio, tio*—up to fifteen times in a shrill tone, but this does not seem to be true of the British species.

The lesser spotted-woodpecker utters a note recalling that of the noisy blackbird going to roost—*kinck, kinck, kinck, kinck*.

The greater spotted species, in contrast with his relatives, is a singularly silent bird, having no cry but an occasional *quet, quet*, or *gich, gich*, varied at intervals by a low fluid *tra tra tra tra tra*. When nesting it utters a call like *clack, clack*; and when alarmed a loud ringing cry like *chink, chink*.

Though as a vocalist inferior to its relatives, as an exponent of the instrumental music to which reference has been made, the greater spotted-woodpecker is easily first. This music takes the form of a weird drumming sound, once heard never to be forgotten. The method of its production was for long a mystery, and by earlier ornithologists was believed to be produced by vibratory motions of the head while the beak was thrust into a cleft in the tree on which the bird was perched. As a matter of fact, these strange sounds are produced by blows of the beak upon a branch, delivered so rapidly that the head presents a blurred appearance. The sounds thus made vary with the resonance of the wood, and can be heard at a distance of half a mile. Since these strange vibrating notes commonly beget

an answering response from some more or less distant part of the wood, they have been supposed to be the accompaniments of courting. This may be so, but they are also made on occasions of alarm or of great excitement, as when the nest is being robbed. Thus Montagu¹ remarks that on one occasion, when a chisel and mallet were used to expose the nest of a greater spotted-woodpecker, the female did not attempt to escape till a hand was introduced into the nest, when she quitted the tree by another opening, and "flew to a decayed branch of a neighbouring tree and there began her jarring noise . . . which was soon answered by the male from a distant part of the wood, who soon joined his mate, and both continued these vibrations, trying different branches till they found the most sonorous." The fact that these strange noises may be heard at all times of the year¹ led some ornithologists to believe that they were made to arouse insects, but this interpretation is not supported by facts. As we have already hinted, the greater spotted-woodpecker is not the only performer of this kind, its smaller relative and the green-woodpecker being also skilled in this matter.

That the woodpeckers depart very widely in their structural characters from all our other woodland birds is a matter of common knowledge, but as to the details of this departure information is by no means so general. In the first place, then, by the process known as "adaptation," these birds have become transformed in certain particulars which are correlated with their peculiar mode of life. The peculiar features, in short, which distinguish these birds seem to have come into being in response to the needs of the organism, or, in other words, to the demands of the environment. But though this interpretation is in the main correct, we are yet far from understanding the nature of the subtle action and interaction of the one upon the other.

The external evidences of this adaptation are to be found in the density of the beak-sheath, which serves as a pickaxe, the zygodactyle feet and large claws, which form admirable climbing organs,

¹ *Ornithological Dictionary*, p. 541.

¹ That it is a fact is disputed.

Plate 76

Green-woodpeckers, male (left) and female, the
latter protruding her tongue to catch ants

By A. W. Seaby



the long, stiff, pointed tail feathers, which provide the necessary support for the body while the beak is performing its function of pick-axe. That the peculiar qualities of the tail feathers are intimately associated with the work of wood-hewing, and not merely with climbing, seems to be shown by the fact that the little nuthatch, which is even more expert as a climber, has small, soft tail feathers. On the other hand, the tree-creeper, which is not a wood-hewer, has the tail feathers of a woodpecker! Herein are contradictory facts which, so far, have not been explained.

Among the internal structures which call for comment, the tongue is the most remarkable. This, as is well known, is of great length, cylindrical, more or less barbed at the tip, and capable of being protruded for some considerable distance beyond the beak, when it is covered with the copious secretions of a pair of large salivary glands lying beneath and on either side of the lower jaw. These glands open by a duct beneath the tongue, and ensheath this organ with a sticky envelope to which insects adhere the moment it touches them, and are thus borne back into the mouth. In the green-woodpecker this mechanism attains its highest development, the supporting bones of the base of the tongue having become excessively elongated so as to form a pair of long, thread-like rods which, when the tongue is at rest, meet at the occiput and curve upwards and forwards over the roof of the cranium, resting in two deep grooves in its surface, till their free ends are finally received within the cavity of the right nostril. Now it is the green-woodpecker, be it noted, which has the greatest need of such an elaborate contrivance, since it lives largely on ants, which are aroused from their nests in swarms, and must be secured quickly. Thus it would seem the source of food supply has followed, by selection, the maximum development of a mechanism which is common to all woodpeckers. It was commonly supposed that the barbed tip to the tongue was used to "spear" insects, but its purpose seems rather to detach them, when necessary.

There are two or three other points in regard to the skeleton of

the woodpeckers which, being correlated with their peculiar habits, require mention. The first of these concerns the density of the cranial bones necessary to resist the shocks of blows dealt by the beak ; the second concerns the "pygostyle," the terminal bone of the tail, which, to afford a stronger attachment for the stiff tail feathers which at times have to support the weight of the body, is enlarged to form a large disc. A similar disc, be it noted, is developed in the pygostyle of the peregrine falcon, and this because, in like manner, the tail is called upon to resist severe strains, albeit of a different kind. The shoulder-girdle and sternum also present features demanding comment, since the scapula terminates in a peculiar hook-shaped process, as yet unexplained, but probably concerned with the muscular strains incidental to the bird's mode of life, and, in particular, to wood-hewing : while as touching the keel of the sternum, it is commonly supposed—and the so-called "popular" books on ornithology are largely responsible for the myth,—that the woodpecker has no "keel" to the breast-bone, a dispensation of Providence to enable the bird to cling sufficiently close to the tree to prevent being overbalanced !

From the study of structure we may now profitably turn to some interesting facts in regard to coloration. In the first place, we would draw attention to the frequency of more or less extensive patches of red in the plumage of woodpeckers, and our British species are no exception to the rule. In the green-woodpecker alone is this resplendent colour worn by both sexes, and at all ages, in the form of a patch on the crown, though in young birds it is but feebly developed. In the lesser spotted species the adult male has a red crown patch, his mate lacks this ornament, but the young of both sexes resemble the male, save that in the young female the red area is smaller, being restricted to the fore part of the crown, and is finally lost. In the greater spotted species the young have red crowns in both sexes, but in the adult female the red is lost, and in the adult male it is transferred to the nape. The loss of red in the adult females is curious, and affords food for reflection. As a rule we regard ornamental

patches as being first developed by the male, then by the female, and finally by the young, and instances where such patches appear in the fledgling and disappear in the adult are rare indeed. The facts just set down are the more noteworthy, since as regards the rest of the plumage there is no very striking difference between adults and young, the green-woodpecker showing the greatest contrast in this respect. But the male of this species differs from the female, as we have already remarked, in having a malar patch of red—he represents the most highly coloured of his race; next after him comes *Gecinus vaillanti* of North Africa, the male of which lacks the red malar stripe; and after him, *G. canus* of the Continent, wherein the male has only a small area of red on the crown, the young a still smaller patch, and the female none at all. Herein we have another instance where the usual sequence of the development of colour, first by the male, then by the female, and finally by the young, does not obtain.

The natural bias towards red, so to speak, is seen again in the great spotted-woodpecker, since between the Persian Gulf and the Mediterranean other forms occur which show a tendency to produce a red pectoral band, which is traceable even, occasionally, in our British race; and this tendency finds its final expression in *Dendrocopus numidicus* of North Africa, wherein a crimson pectoral band is conspicuous.

THE WRYNECK

[ORDER: *Coraciiformes*. FAMILY: *Iynxiinæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. W. P. PYCRAFT. A. L. THOMSON]

WRYNECK [*Iynx torquilla*, Linnæus. Cuckoo's mate, barley or snake bird, long tongue. French, *torcol*; German, *Wendehals*; Italian, *torcicollo*].

1. Description.—The wryneck may readily be distinguished by its zygodactyle feet, protrusible tongue, and the exquisite mottled greys and brown of the plumage. The sexes are alike, and there is no seasonal change of plumage. (Pl. 77.) Length 7 inches [177·80 mm.]. In the male the upper parts are of a silvery grey, finely “powdered” or freckled with darker grey, and faintly tinged with buff. The crown is variegated by narrow bars of dark chestnut and small oval spots of white; while the hind neck and interscapulars are of a pale chestnut, with broad striations of very dark chestnut. The scapulars are lichen-grey with sharp streaks of chestnut; the lower back is similarly coloured and mottled with white. The wing-coverts are pale chestnut, freckled with grey and spotted with white. The remiges are dark brown, with pale chestnut bars on the outer webs: the innermost secondaries are of a pale chestnut freckled with grey, and barred with dark chestnut. The tail is lichen-grey, with more or less conspicuous zig-zag bars of black, bordered with white. The throat and foreneck are of a rich buff, with closely set transverse dusky bars; the rest of the under parts are of a pale buff or white, the mid-breast marked with chevrons of dark grey—or the chevrons may be Y-shaped. The flanks are marked by dusky transverse bars, but the abdomen is without markings. The under tail-coverts are white, barred with dark chestnut and pale buff. The female is slightly duller and slightly smaller than the male. The juvenile plumage differs from that of the adults in being darker and greyer than the adult, the pale chestnut areas of the adult are in the juvenile darker and duller: the white spots

on the head are larger, the crown is further heavily barred with dark grey. The interscapular area is uniformly dark chestnut, and the innermost secondaries have terminal paired spots of white. The throat lacks the rich buff of the adult, though it may be tinged with pale buff. [W. P. P.]

2. Distribution.—A widely distributed species, which is found on the Continent up to about lat. 64° N. in Norway and Finland, but in the Mediterranean countries is chiefly known as a passing migrant. Its range extends across temperate Asia to Kamtschatka and Japan, where it is represented by a paler race; and darker forms are resident in Sardinia and Algeria. In the British Isles it is a summer visitor to England and Wales, and is chiefly met with in the midland and southern counties of England, but does not breed in Cornwall, is scarce in Wales, and very local and rare in all the northern counties, although it breeds in small numbers in Yorkshire, and occasionally in Durham. It has not been proved to nest in Scotland or Ireland. During the winter months it migrates southward to Central Africa across the Sahara, and in Asia to India, but probably the Sardinian and Algerian birds are more or less sedentary. [F. C. R. J.]

3. Migration.—A summer visitor to those parts of England and Wales mentioned above as comprising the species' British breeding-area. On the eastern seaboard of Great Britain, from the Shetland and Orkney Isles southwards, the wryneck occurs regularly in small numbers on both migrations, the individuals participating in these movements doubtless being birds of passage to our area as a whole and breeding in Northern Europe. To the remainder of Great Britain the species is an occasional wanderer from some source or another (cf. Saunders, *Ill. Man. B. B.*, 2nd ed., 1899, p. 271; Witherby and Ticehurst, *British Birds*, i. 280; Nelson, *B. of Yorks.*, 1907, p. 271). In Ireland the wryneck "has been obtained in six cases on islands or near the coast; once in May, and five times in autumn": these occurrences are well distributed round Ireland, including cases from islands on the extreme east, south, west, and north-west (cf. Ussher and Warren, *B. of Ireland*, 1900, p. 107). There is also a single record for the Isle of Man (cf. Ralfe, *B. of the Isle of Man*, p. 214). The spring immigration into the British Isles takes place almost exclusively on the south-eastern coasts of England, from Essex to Hampshire. A few examples usually appear late in March, but the first large influx occurs about the second week of April as a rule: by mid-May all movement is apparently at an end. The emigratory movement becomes noticeable before the end of August, and has practically ceased soon after the middle of September. Migration is undertaken singly or in very small parties (Cf. *B. O. C. Migration*

Reports, i. p. 109 ; iii. p. 155, etc. : and Ticehurst, *B. of Kent*, 1909, pp. 230, 232).
[A. L. T.]

4. Nest and Eggs.—Unlike the woodpeckers, the wryneck prefers to take advantage of some natural hole or opening in a tree, and has also been known to breed in a sandmartin's burrow or in a hole in a bank, while nesting-boxes are also freely used. No nest is made, and the eggs, which are generally 7 or 8 in number, but have been known to vary from 5-12, and even 14, are pure white in colour. When they are removed singly, the bird has been known to lay as many as 40-42 eggs. They are more opaque and less glossy than those of the lesser spotted-woodpecker, and are on the average larger and heavier in proportion. Average size of 100 eggs, $\cdot 80 \times \cdot 60$ in. [$20\cdot 4 \times 15\cdot 37$ mm.]. Occasionally these eggs become stained like those of the green-woodpecker. The breeding season extends from about mid-May to early June. Incubation lasts about 14 days, and is apparently performed as a rule by the hen alone, who is a very close sitter, but Naumann states that occasionally the male has been known to relieve her in the afternoon. Only one brood is reared in the season. [F. C. R. J.]

5. Food.—The adults feed largely on ants, but all kinds of insects are eaten, and in the autumn small berries. The young are fed by both parents on boluses of insects. [W. P. P.]

6. Song Period.—In the British Isles from its arrival to about June 4 (F. A. Chennel): to early June and occasionally to the middle of July, while after the young are out a harsh rattle is often made (C. J. and H. G. Alexander). I have also heard the cry uttered by birds on spring migration through Southern Spain. [F. C. R. J.]

THE WRYNECK

Externally the only feature which this singularly beautiful bird possesses in common with the woodpeckers is the structure of the foot; but that the wryneck is a woodpecker, in the general sense of the term, there can be no question. This fact is proclaimed not only in the structure of the tongue, but also in other no less important, though less obvious, anatomical characters.

In the peculiar coloration of its plumage it more nearly resembles the nightjar, and differs conspicuously from the woodpeckers, from which it furthermore departs in the nature of its tail-feathers, which are large and broad, not pointed, and almost spine-like. This last peculiarity we must attribute to the fact that the wryneck is not a woodpecker like its relatives, which need these spiny tail feathers as supports when engaged in exposing some luscious grub buried deep in wood, or when fashioning a nursery.

Though indubitably an arboreal bird, the wryneck obtains much of its food on the ground, feeding largely, like the green-woodpecker, on ants and their pupæ obtained from ant-hills. When seeking prey of this kind, the earth is removed from a portion of the nest, and the long sticky tongue is forced this way and that into the long galleries, to return at each thrust black with victims. In picking up pupæ from the surface, the action of the tongue may sometimes be seen, but it is moved with incredible speed, the white morsels appearing against the dark earth as white streaks as they are hurtled backwards into the hungry bird's mouth. Indeed, as one observer has remarked, they seem rather to rush into the mouth as if drawn by a magnet, the tongue being too rapidly moved to be apparent. Naturally, much soil is swallowed at such feasts, and the gizzard always contains a considerable proportion of fine earth in consequence. But ants are always to be found in considerable numbers running up and down

the trunks of trees, and these and other insects affecting a similar habitat form a large proportion of this bird's food. In autumn, however, the insect diet is said to be supplemented by elder and other small berries.

On the ground its gait and appearance are peculiar, for it advances with short jumps, and keeps its tail elevated. While feeding the body is motionless, and if disturbed it rises somewhat confusedly, with an undulating flight, making for the nearest shelter, which it has seldom far to seek.

Like the typical woodpeckers, the wryneck breeds in hollow trees, but these cavities are always adopted ready-made, the beak being of too feeble a character to be used, pick-fashion, like that of the woodpeckers. Hence it is that the eggs are sometimes found on a bed of moss, wool, hair, or feathers, material brought in by starlings or titmice, as the case may be. As a rule, however, the deserted hole of a woodpecker seems to be preferred. Old posts are sometimes selected, and hence it is not surprising to find that the wryneck takes kindly to nest-boxes hung up for their benefit in gardens.

The wryneck seems to possess a most tenacious affection for its chosen nesting-place: as much at any rate seems to be established by the fact that a Mr. Norgate, so long ago as 1872—happily—perpetrated the particularly senseless and brutal experiment of repeatedly taking the eggs of a bird which he had discovered breeding within his reach. Between May 29 and July 13 he took no less than forty-two eggs, and the following year as many more. In 1874 the bird again took possession of this hole, but her reproductive powers seem to have been exhausted, for she laid but one egg, and the following year the place was deserted.

As in the case of the woodpecker and other birds which breed in holes, the eggs are white. Both parents take part in incubation, and both share in the work of rearing the young brood. Ants and their pupæ, woodlice, small spiders, and small insects of all sorts, are administered in the form of a glutinous bolus. The callow wryneck, like

Plate 77

Wrynecks quarrelling

By A. W. Seaby



OF
POLIA

the young of barbets, have the "heel" protected by a curiously roughened pad, whose function is not quite clear. Young woodpeckers of the same age, as one would expect, possess a similar pad. As soon as they leave the nest these pads disappear.

Our woodpeckers remain with us the year round; not so, however, is it with the wryneck, which arrives with the cuckoo and departs with him—that is to say, they reach us at about the same time, though they may not necessarily travel in company—and so fixed is this rule that the wryneck, in consequence, is commonly known as the "cuckoo's mate." Its presence among us is announced by its call *pee pee pee pee pee*, though this, resembling as it does that of the resident lesser spotted-woodpecker, sometimes causes the unwary and expectant to proclaim the arrival of the migrant some weeks before it actually takes place.

Soon after their arrival, if the weather be favourable, the wryneck begins his courtship, concerning which, however, much remains to be learned, though enough has been seen to show that it is remarkable, among other things, for the strange play of the head and neck. The pairing birds, standing on a bough, facing one another, twist and turn the long lithe neck about with an indescribable writhing motion, the beaks pointing straight upwards. So much I have myself witnessed; but I have not yet had an opportunity of watching these birds at this time of year with sufficient closeness to be able to study the whole of the antics which I am certain must take place.

In addition to the curious cry just referred to, the wryneck, if molested when sitting, utters a most realistic snake-like hissing, which, issuing from the dark recesses of its nursery, is undoubtedly disconcerting. The young also hiss, as it may be remembered do young woodpeckers, but the adult woodpecker seems to have discarded this device. But the young also, Miss E. L. Turner tells me, make a most delightful sound all together, in the nest, just like the jingling of silver coins. Hissing, however, is but one means employed by the

wryneck to impose upon its enemies. When held in the hand, this bird at first, as if to divert attention or to excite fear, makes strange play with its head and neck, writhing the neck, raising the feathers of the crown, rolling its eyes, and darting out the tongue. If it be not then released it will grasp a finger and hang limp with closed eyes, as if dead, but seizing the first favourable moment to loose its hold and escape. It is certain that this strange conduct cannot have come into being merely to escape these occasional moments of contact with man; but so far it is difficult to understand what benefit the bird derives in regard to its normal environment from this conduct. On what occasions does this "death feigning," as it is commonly called, benefit the performer. The term "death-feigning," used in its everyday sense, is a misnomer, for it is certainly not enacted with conscious purpose. Nevertheless it may be in some way an adjunct to its peculiar coloration, which is apparently of a "protective" character, harmonising perfectly with the bark of the trees on which so much of its life is spent. These sober hues, so exquisitely stippled and blended, contrast in a striking fashion with those of our typical woodpeckers. True, the livery of the green-woodpecker suggests a protective garb, while the plumage of the greater and lesser spotted species would seem to be otherwise. Nevertheless, recent study seems to show that even a garb which appears to present striking contrasts, such as we have in black, white, and red, may yet be protective. That is to say, by reason of these very contrasts of colour the solid appearance and contour of the body are broken up, thus ensuring invisibility.

Young wrynecks are said to be easily tamed, and to be very entertaining in confinement. According to Yarrell, they will not only take food from their keeper's hand, but climb over his clothes probing every fold and opening with the long lithe tongue; and in like manner they will explore the furniture of the room, take flies from the window pane, and afford much amusement by their encounters with one another. Here his information stops: just at the most interesting and instructive point—the nature of these encounters. Had these been described,

light might have been thrown upon some of the vexed questions to which we have already alluded.

That this bird makes a delightful pet is not surprising, but one is a little startled to find that in the south of Europe it is esteemed a table delicacy, at any rate in the autumn, when the body has accumulated a store of fat to serve as a food reserve on migration: one would have imagined that the diet of ants, which form the stock dish of the wryneck, would have made its flesh unpalatable.

THE SWIFT

[ORDER: *Coraciiformes*. FAMILY: *Cypselidæ*. SUBFAMILY: *Cypselinæ*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. F. B. KIRKMAN. W. P. PYCRAFT. A. L. THOMSON]

SWIFT [*Ápus ápus* (Linnæus). *Cýpselus ápus* (Linnæus). Deviling, squealer, longwing, black-martin, devil-screamer, screecher. French, *martinet noir*; German, *Mauersegler*; Italian, *randone*].

1. Description.—The swift is readily distinguished by its uniform sooty black coloration and the great length of the wings. The sexes are alike, and there is no seasonal change of plumage. (Pl. 78.) Length, 7 in. [177 mm.]. The adult is of a sooty black colour, the upper parts, save the wings and tail, having a faint bronze-green sheen. The under parts are also sooty black, but lack the metallic green reflections, while the throat is of a dull white. The juvenile plumage differs from that of the adult in that the feathers of the forehead have white fringes, giving a hoary appearance, while the major coverts and remiges have a narrow edging of white. [W. P. P.]

2. Distribution.—A summer visitor to the European continent, ranging as far north as lat. 70° in Scandinavia and Archangel in Russia. Two or possibly three local races, whose limits are as yet imperfectly known, probably replace it in the Mediterranean region, and others inhabit the temperate regions of Asia, south to the Himalayas. In the British Isles it is widely distributed, but is scarce and uncertain in its appearance in N. Scotland, and rare in the Outer Hebrides and Skye, while to the Orkneys and Shetlands it is only a straggler. To Ireland it is a common summer visitor, and Ussher states that it is now much in evidence even on the west side. During the winter months our birds migrate to Africa, passing over the whole continent and ranging south to Madagascar, Natal, and Cape Colony. [F. C. R. J.]

3. Migration.—A summer visitor to the British Isles. The south of Europe is often reached by early March, Lapland not till June. Between these two extremes

of latitude and season we have the immigration into the British Isles in the first half of May. A swift was reported, on the best authority, from Lowestoft on 26th March 1897, an utterly exceptional date. A few swifts appear in the south of England and of Ireland before April is out in most seasons, but the main influx occurs about the second week of May as a rule. In the more northerly parts, including the whole of Scotland, swifts are seldom seen at all till May (cf. Saunders, *Ill. Man. B. B.*, 2nd ed., 1899, p. 261; Ussher and Warren, *B. of Ireland*, 1900, p. 103; and Serle, *Ann. Scot. Nat. Hist.*, 1909, p. 183). As in the case of many of our other summer visitors, the swifts very markedly arrive "first and chiefly on the western half" of the south coast of England, often spreading thence into the eastern districts before direct immigration occurs on the coastline of these (cf. *B. O. C. Migration Reports*, i.-v., but especially ii. pp. 145-151; and Ticehurst, *B. of Kent*, 1909, p. 225). Towards the end of May 1886 two swifts were found dead from cold at New Ross, Co. Wexford, and one of these had a piece of paper tied under its tail, bearing the inscription, "Mary Elsam, Suakim, Egypt, 10-3-86" (cf. *Field*, 29th May 1886). Southward movement is to be noticed on the east coast of Great Britain as early as the end of June, and becomes general after mid-July. Scotland is deserted by most of its swifts by the first week of August, and a similar state of affairs is true for the whole British area by the end of the month. The movement continues faintly till mid-September in the south of England, and only stragglers are to be seen thereafter, although they have been recorded as late as 1st December (Cf. Nelson, *B. of Yorks.*, 1907, p. 262; *B. O. C. Migration Reports*, iii.-v.; Ticehurst, *loc. cit.*; Saunders, *loc. cit.*; and Ussher and Warren, *loc. cit.*). There is no proof of passage to and from more northern lands by way of the British Isles, although a record from Shetland, 4th October 1909, among others, might be considered as suggestive of this (cf. Baxter and Rintoul, *Ann. Scot. Nat. Hist.*, 1910, p. 203). The swift is a markedly gregarious migrant, and solitary early and late individuals are comparatively infrequently met with. On passage they travel in parties of from five to twenty, or in flocks of twenty to two hundred during a "rush" or strong movement (cf. Nelson, *loc. cit.*). The birds of a colony frequently arrive *en masse*, not heralded by forerunners, as so often occurs with swallows and others; but neighbouring colonies may receive their respective inhabitants at quite different dates. A case has been recorded of two Devonshire colonies three miles apart, at one of which the swifts one year arrived exactly a week before any appeared at the other (cf. Elliot, *Trans. Devon A. A. Science, etc.*, 1907, p. 79); and the present writer has noted a similar interval, in

two consecutive seasons, between the dates of arrival at two Aberdeenshire colonies ten miles apart. The swift journeys both by day and by night. [A. L. T.]

4. Nest and Eggs.—The nest is generally found under the eaves of buildings or in crevices and holes in walls, less frequently in natural crannies and crevices of rocks and quarries. When suitable accommodation is available, it always breeds in colonies. Exceptionally it has been known to take possession of a house-martin's nest, and in East Prussia, Finland, and Corsica it breeds in woodpeckers' holes and natural openings in trees (cf. *Vertebrate Fauna of the Moray Basin*, vol. ii. pp. 298-9). The nest itself is of a very simple character, being merely an accumulation of straws, grasses, seeds of various trees and feathers, picked up on the wing or found in the nest-hole, and fastened together by a viscous secretion from the mouth of the bird, apparently the work of both sexes. Fresh flowers of buttercups have also been recorded several times as found in nests. The eggs are two or three in number, chalky white in colour, and devoid of gloss. Average size of 100 eggs, $\cdot 98 \times \cdot 63$ in. [$24\cdot 9 \times 16\cdot 2$ mm.]. They are laid in the last week or so of May and early in June, and incubation, which lasts about 18 days, appears to be performed by the hen alone. Only one brood is reared during the season. [F. C. R. J.]

5. Food.—Insects, chiefly Beetles and Flies, also *Lepidoptera*. The young are fed on insects, almost certainly by both parents, but the evidence conflicts (see p. 360). [F. B. K.]

6. Song Period.—Its song, if this term may be applied to its harsh screaming notes, is heard during most of its stay. [F. B. K.]

The following species are described in the supplementary chapter on "Rare Birds" :—

Alpine-swift, *Apus melba* (L.).

Needletailed-swift, *Chaetura caudacuta* (Latham).

THE SWIFT

[F. B. KIRKMAN]

Formerly the Swifts used to be classed with the Swallows, to which in external appearance and mode of life they are not unlike. Fundamental differences in structure have made it necessary to separate the two groups, and not only so, but to place the Swifts quite outside the great Order (*Passeriformes*) to which the Swallows belong. The Swifts now form a group apart (*Cypseli*) with the Humming-birds, to which, though not very closely related, they have important resemblances, notably the great length of the wing-bones, the deep unnotched keel, and the absence of the intestinal blind-sacs. From the Swallows and other Passerine birds they differ in what is one of the chief characteristics of the *Passeres*, the structure of the foot. The Swifts have four toes, all directed forward, none of which can be bent independently of the others. The *Passeres* have four toes, but one of these is directed backwards, and can be moved independently of the others. Again, the great majority, if not all, Passerine species have the power of song, though some, like the raven, make poor use of it.¹ The Swifts have no song, unless this term be applied to its screaming note. They differ further from the *Passeres* in the distribution of their feather tracts and other particulars. But as they are alone in resembling the *Passeres* in the form of the skull,² and are similar to them in other respects, they are placed with them on the same great branch of the avian genealogical tree.³

There are numerous species of Swifts, but three only are to be found on the list of British birds, and of these the Alpine-swift is a

¹ See vol. i. p. 12.

² With differences. See Beddard, *Structure and Classification*, p. 229.

³ For the systematic position of the swifts, see Beddard, *Structure and Classification*, p. 224 (and works there quoted); W. P. Pycraft, *History of Birds*, p. 57; *Zoologist*, 1889, 91 (W. K. Parker); *Ibid.*, 1877, 217 (A. H. Garrod).

rare, and the needletailed-swift a very rare occasional visitor. The third, our well-known summer visitor, *Apus apus*, is a familiar sight, and is easily distinguished at a distance from the *Hirundinidæ*, both by its larger size and the long narrow scythe or scimitar-shaped wings, which, when full spread, form a black crescent cut through the middle by the bird's body. Even more than they is it a denizen of the air. Its feet are ill adapted for walking or perching. It can, indeed, hardly be said to do either, except in so far as is necessary for getting in or out of its nest. On the other hand, its strong curved claws enable it to cling easily to walls or other convenient situations, and this is its substitute for perching. On the ground it is rarely seen, and then only occasionally when engaged in conflict with some other bird, or when too exhausted by hunger or sickness to fly. When on the ground, it has, owing to its long wings and short tarsus, to make an effort to raise itself into the air, but that it can do so, even from a flat surface such as a floor, table, or deck, is now well established. Birds that fail to rise are no doubt either injured, too frightened, or too tired.¹

Once in the air the swift is supreme. There are few things that give one so much the sensation of triumphant exhilarating speed as the sight of a serried band of these birds rushing with wild screams in frenzied flight about the sky. There is, perhaps, no other bird that can overtake them, unless it be the long-winged hobby, but whether even the hobby can catch a full-grown swift in perfect health is a matter of doubt.²

More dangerous to the swift than hawks are the parasitical insects by which its plumage is infested. It may be attacked by at least six different kinds,³ and small though they be, yet able at times to bring low, even to the ground, this Nimrod of the air, thus aveng-

¹ For the evidence see in particular Lilford, *Birds of Northants*, i. p. 247; Ussher and Warren, *Birds of Ireland*, p. 103; *Nature Notes*, 1891, 67-9 (Aubrey Edwards); *Field*, 1890, vol. lxxvi. pp. 816, 850.

² Cf. Naumann, *Vögel Mitteleuropas*, iv. 237.

³ *Hippobosea hirundinis*, *Eureum cimicoides*, *Anapera pallida*, *Menopon parvulum*, *Menopon pulicare*, and *Menopon tibiale*.—Naumann, *Vögel Mitteleuropas*, iv. 238.

Plate 78

Swifts

By Winifred Austen



ing the slaughter of thousands of the insect race. One bird picked up was found to have sixteen parasites busy round its eyelids. "They had eaten the lid and drawn blood from the eye. When the bird was laid down he was continually clutching at his eyes with his feet."¹ When in flight swifts may be seen trying to get rid of their tormentors in the same way. Their life, therefore, is not all joy. Nature does not give them for nothing the glorious freedom of the air.

The worst enemy of the swift tribe in this country is, however, cold weather occurring after their arrival. Exhausted by a vain search for food, many then fall to the ground and perish.

Like the swallows, they hunt for their food chiefly in the air, snapping to right and left, and apparently collect a number of insects in the mouth before swallowing. Birds shot, whether when they have young to feed or not, may be found with the mouth full of insects—as much as a teaspoonful²—attached to the sticky saliva with which it is abundantly provided. Swifts also take their food from the surface of water. I have seen one, when flying over a river, suddenly pause, and with wings upturned and motionless, its breast almost touching the water, pick something from the surface, and then pass on. Bailly, who alone appears to have recorded the fact, states that at early dawn swifts may also be seen flying over the ground, picking from the blades of grass or the leaves of bushes the drowsy insects that lie waiting for the vivifying rays of the sun to give them energy to wing their way to the upper air, where once more they meet the swift.³

Like the swallows, again, the swift is a summer visitor to this country, but, stragglers apart, it reaches us about a month later and departs more than a month earlier. It arrives in flocks, and the pairs appear to proceed almost at once to their breeding-place. As the migration is spread over several days, one place may receive its birds at a much earlier date than another, and this occurs when the colonies are close together. For instance, in Devonshire the migrants

¹ *Field*, 1885, lxx. 792.

² A. H. Patterson, *Notes of an East Coast Naturalist*, p. 103.

³ *Ornithologie de la Savoie*, i. 231.

returned to one colony exactly a week before a single bird was seen at another only three miles away, a fact which seems to show that neighbouring colonies do not necessarily winter in the same localities.¹

What form of love-display, if any, the species indulges in is not recorded, but there is a certain amount of fighting and quarrelling, which is increased by the fact that the species breeds gregariously. It is for possession of nesting-holes that most of the serious fighting takes place, and this chiefly with other species, notably the starling. The latter has an obvious advantage in his stronger bill, and there can be no doubt that he uses it; the swift relies solely upon his claws, with which he grapples his opponent, sometimes so firmly that they are difficult to extricate. The fight may take place in the nest, in the air, or on the ground, and possibly, of course, all three places in succession. The issue of the contest, perhaps, depends upon where the swift manages to fix his claws. If into the head and breast of the starling, the latter probably gets the worst of it. This happened in the case of a starling which had been seized in its own nesting-box; both its head and breast were torn and bleeding.² Mr. Aubrey Edwards records another case in which a starling tried to enter and eject a swift from its nesting-hole. It was repulsed with loss of some of its feathers. When the birds grapple in the air, both fall to the ground, and, according to Mr. Jourdain, the swift then usually gets worsted.³ On one occasion a swift's claws were found so firmly driven into a starling that the two were difficult to separate. The swift was much injured about the head and eyes, apparently by other starlings who had been observed busy about the prostrate combatants.⁴ On another occasion twenty starlings are reported as having been seen upon the ground buffeting one swift, which was picked up in a disabled condition.⁵ Sparrows and swifts have also encounters for

¹ *British Birds*, i. 265; *Transactions Devon A. A. Science*, 1907, p. 79 (E. A. S. Elliot); *Bulletin Brit. Ornith. Club*, xvii. p. 12.

² Naumann, *Vögel Mitteleuropas*, iv. 235.

³ *Zoologist*, 1901, 286.

⁴ *Field*, 1862, xx. 103.

⁵ *Field*, 1880, lxxiii. 754.

possession of desirable sites, the first to take possession generally maintaining his position.

Having secured a nesting-hole, with or without a fight, the swift has next to face the problem of obtaining material to build its nest, its strong objection to alighting on the ground creating a difficulty not easy to overcome. It simplifies the problem by dispensing with all but the lining. It neither imitates the mud structure of the swallows, nor the heaped-up straw and grass foundations of the starlings and sparrows. The lining consists of a variety of material—straw, grass, feathers, lichens, moss, and the like—found *in situ*, collected by the bird on the wing, or sometimes, it is said, stolen from the nests of its neighbours. I can find no record that it has been seen collecting material on the ground, though no doubt, as Bailly notes, it picks up, when in flight, from the ground or elsewhere anything suitable, just as it picks food off the surface of water or from blades of grass.¹ The lining may be so slight as to form a mere ring round the eggs, which are laid on the bare stone.² Bailly, again, states that pairs sometimes fail to find any material, and that "this appears to occur not infrequently in towns, as any one may ascertain by visiting a number of swift nests in May," and that, in such cases, the eggs are placed on the grit lying in the hole, this being raked together in the form of a nest, and made into a kind of cement by the addition of the salivary secretions of the bird.³ The same secretion is used to glue together the ordinary materials used. The nest is saucer-shaped, and not always deep enough to prevent an egg rolling out, if the owner chances to quit it in a hurry.

The habit of using salivary secretions as nest-cement is general among swifts. The American chimney-swift glues together twigs into a semi-circular nest which it attaches to the inside of chimneys. Another species (*Macropteryx coronata*) builds in the same way a half saucer of bark and feathers, which is glued to a branch. Salvins' swift

¹ Bailly, *Ornithologie de la Savoie*, i. 238.

² *Zoologist*, 1901, 384 (A. Ellison).

³ *Ornithologie de la Savoie*, loc. cit.

collects seeds, and uses its saliva to fashion therewith a nest over two feet in length. This remarkable nest-bag is hung from the under-surface of a rock. Lastly, the esculent-swifts build their nests often entirely of saliva, and attach them to the walls of caves, whence they are torn to provide the well-known bird's-nest soup of the Chinaman.

Both sexes share in the work of construction, but how long it usually takes to complete is not recorded. The hen appears to be alone responsible for incubation. The cock contents himself with bringing her an occasional meal, and spends most of his time in riotous living with his fellows, a fact noted long ago by the discriminating eye of Gilbert White: "On hot mornings several, getting together in small parties, dash round the steeples and churches, squeaking as they go in a very clamorous manner: these, by nice observers, are supposed to be males, serenading their sitting hens; and not without reason, since they seldom squeak till they come close to the walls or eaves, and since those within utter at the same time a little inward note of complacency."¹ This is not the only form of play indulged in by swifts. Sometimes one bird pauses in flight and clings to a wall. Its fellows pull him away, and off they all go screeching in a follow-my-leader chase, each trying to buffet the one in front. If one slips into his nest-hole, the others pause a second to scream remarks outside, complimentary or otherwise, and then pass on. And as they flash by each nest, the sitting hen sends after them a sympathetic scream of excitement.² It has been often observed that in these chases the course is always in one direction, never varying. The call to take part in the game is quite distinguishable from the other squealing notes uttered by the bird.³

The hens occasionally issue from their nest to feed or stretch their wings. This they often may be seen doing in the evening, and are indeed tempted to delay the return to their duties until driven home by the cocks, who follow, with scolding notes, each turn and twist of their

¹ Letter to Barrington, September 28, 1774.

² *Nature Notes*, 1891, 67-69 (Aubrey Edwards).

³ F. C. R. Jourdain (*in litt.*)

unwilling mates, and leave them no peace till they are back on their eggs. When this task has been satisfactorily achieved, the cocks themselves, now free from domestic cares, join in a jovial band, and fly screaming upwards. At a certain height they slow their movements and soar on quivering wings in large ascending circles. Up and up they go, mere specks in the darkening sky, till at last they vanish wholly. There, between heaven and earth, they pass the night, floating asleep about the upper airs on widespread tranquil wings.

Such at least is the explanation given of these strange night-flights, for the birds, once lost to view, have not been seen to return the same evening to their nests. On one occasion, at least, they were seen to rise but not disappear; at a certain altitude they seemed "to limit themselves more and more to a restricted area, until eventually they merely floated in company upon the wing—not in the so-called night-flight, but in their 'aerial sleep.'"¹ On the other hand, there is no trustworthy evidence that any one has yet seen their descent in the morning. This is a sight that awaits perhaps some fortunate ornithologist, who will thus be able to convert assumption into certainty.

These curious flights take place usually on fine nights, but occasionally in any weather.² The birds have been seen to ascend some distance, and then return, not finding the air to their liking.³ Small colonies seem to fly away to some central spot and thence ascend, but here more evidence is needed.⁴

When not away, the cocks roost in the nest-holes. They may also sleep clinging to branches or buildings. That the species is in the habit of doing this is evidenced by the fact that one was seen clinging to a pendant branch in a tree twenty feet above the ground. It hung there "suspended vertically, swaying like a scarecrow to and fro in the breeze, and evidently settled for the night."⁵ During cold nights

¹ *Zoologist*, 1900, 479 (Steele Elliot).

² *Field*, 1880, lxxiii. 801 (Aubrey Edwards).

³ *Field*, 1898, xcii. 182 (Aubrey Edwards).

⁴ For the evidence as to night-flights see *Field*, 1880, lxxiii. 653 (Witchell), 688 (D. Brodie), 801 (Aubrey Edwards); *Ibid.*, 1898, xcii. 182; *Ibid.*, 1899, xciii. 901 (Witchell); Witchell, *Nature's Story of the Year* (Aubrey Edwards); *Nature Notes*, 1891, 91-2; *Zoologist*, 1900, 479 (Steele Elliot).

⁵ *Nature*, 1897, 298; *Zoologist*, 1897, 468.

several have been observed clinging in clusters about any tall building. "This clustering habit is very peculiar, some of the festoons thus formed being from eighteen inches to two feet in length. Sometimes the outer and more benumbed individuals drop down from the general mass."¹ The birds obviously cluster for warmth, and in clinging they are well served by their strong claws.

The hen roosts, of course, in the nest-hole, and there, after some eighteen to twenty days' incubation, the young are born. Whether the hen only, or both parents, habitually feed the young is still uncertain, the evidence conflicting. The fact that birds have been seen coming to the nest in quick succession points to the latter view as being correct.²

Young swifts resemble the young of the *Hirundinidæ* in being fed with bundles or balls of flies which are thrust down their throats. They differ in being fed at much longer intervals, several hours sometimes intervening between their meals. On the other hand, the meals are large, each of the two or three young birds being fed two or three times alternately,³ the whole process, according to Weir, taking from three and a half to four minutes.⁴ "Swifts," writes Gilbert White, "when wantonly and cruelly shot while they have young, discover a little lump of insects in their mouths, which they pouch and hold under their tongue."⁵ The pouch makes itself externally visible by the bulging chin, as in the case of the Crows. As the young are fed at each visit two or three times in succession, the bundle must in some way be divided before distribution. It would be interesting to know how this is effected.⁶

¹ *Zoologist*, 1903, 267.

² F. C. R. Jourdain (*in litt.*). See also *Nature Notes*, 1891, 50-53 (Aubrey Edwards). In the *Field*, 1898, xci. 910, a correspondent states that he has over and over again seen *three* swifts feeding the young at the nest. It is difficult to believe they were all hens. Perhaps there were two nests in the hole.

³ *Nature Notes*, 1891, 27-30 (Aubrey Edwards).

⁴ Macgillivray, *History of Birds*, iii. 625.

⁵ Letter to Barrington, September 28, 1774.

⁶ For the feeding habits of the alpine-swift see above, p. 304. Swifts, it may here be noted, swallow the excreta of the young, according to Mr. Aubrey Edwards, *loc. cit.*

The young remain in the nest over six weeks,¹ leaving it in the early part of August. They are usually fed for a few days in the air, and then begin their migration south. Gilbert White observed a swift still engaged in feeding its young in the nest on the 24th of August. They disappeared on the 27th. The cause of the delay was found on examining the nest. It was built upon a first nest, and in the latter were the dead bodies of two callow young—a first brood that had perished.²

The early departure of swifts did not escape the attention of White, who paid particular attention to this species. What struck him as mysterious was that the birds left at a time (mid-August) that "is often the sweetest season in the year," when their food supply is still apparently abundant. "Are they," he asks, "regulated in their motions with us by a failure of food, or by a propensity to moulting, or by a disposition to rest after so rapid a life, or by what? This is one of those incidents in natural history that not only baffles our searches, but almost eludes our guesses." These words were written on September 28, 1774, to Barrington. They might with equal truth be written to-day.

¹ In two cases recorded by Mr. Steele Elliot the periods were six weeks three days (*Zoologist*, 1901, 473) and six weeks six days (*Zoologist*, 1900, 479). The dates on which the young left the nest were respectively August 15 and about July 12.

Letter to Barrington, September 9, 1781.

THE NIGHTJAR

[ORDER: *Coraciiformes*. FAMILY: *Caprimulgidae*. SUBFAMILY: *Caprimulginae*]

PRELIMINARY CLASSIFIED NOTES

[F. C. R. JOURDAIN. F. B. KIRKMAN. W. P. PYCRAFT. A. L. THOMSON]

NIGHTJAR [*Caprimulgus europæus* Linnæus. Goatsucker, fern-owl, eve-jar, eve-churr, nighthawk, jenny-spinner, churn-owl, puckeridge, dorhawk, flying-toad. French, *engoulevent*; German, *Ziegenmelker*, *Nachtschwalbe*; Italian, *succiacapre*].

1. **Description.**—The nightjar can be recognised at a glance by the huge bristle-guarded mouth, small feet and legs, and the beautiful lichen-grey plumage variegated by streaks and bars of buff and chestnut. There is no seasonal change of plumage. (Pl. 79.) Length, 10·5 in. [276·70 mm.]. The male has the upper parts of a silvery grey, minutely freckled and vermiculated, with dark brown and dark chestnut. The crown is broadly, the interscapulars narrowly, striated with rich dark chestnut; at the nape is a more or less continuous half-collar of rich buff, while the foremost scapulars have the outer webs rich buff, the inner dark chestnut, forming parallel buff and chestnut bands, while the hinder scapulars are silvery grey finely vermiculated with dark brown and shaft streaks of the same hue. The lesser coverts are almost black, with lateral, irregular spots of buff, and buff tips to the minor coverts from a bar across the wing; the median coverts are silvery grey finely vermiculated with dark brown, the major coverts are of a pale brown, heavily banded with oblique bands of brownish black and shaft streaks of the same hue. The outer secondaries are pale brown transversely barred with darker brown, the inner silver-grey vermiculated and barred with dark brown, and dark-brown shaft streaks. The primaries are of a dark sepia, with irregular spots and bars of pale brown along the basal portion of the outer webs, forming transverse bars in the closed wing. The second primary has a large oval white spot on the inner web, near its middle, and on the third

and fourth the white area extends across both webs; thus a large white "mirror" is formed. The tips of the primaries in the closed wing are of a dull dark silver, irregularly barred with dark brown, and with dark brown shaft streaks. The middle tail-feathers are silvery grey, irregularly barred and vermiculated with dark brown, while the outer feathers are pale brown with heavy, blurred transverse bars of sepia. The two outermost have broad white tips. The under are marked by a patch of white in the centre of the throat, bordered by silvery grey and buff, and bars of dark brown. The fore-breast is silver-grey, finely vermiculated with dark brown and spotted with buff, while the breast and flanks are silver-grey barred with dark brown. The abdomen and under tail-coverts are buff, barred with dark brown. The female is slightly smaller and duller, and lacks the white spots on the wings and tail. The juvenile plumage differs scarcely from the adult, but the young male has the white wing and tail spots tinged with buff. [W. P. P.]

2. Distribution.—During the summer months it is found generally in suitable localities throughout the greater part of the Continent, up to about lat. 63° N. in Scandinavia, but not quite so far north in Russia. In the Mediterranean region it is, however, replaced by a smaller southern form, *C. europæus meridionalis*, Hartert, while other representative forms occur in Asia. In the British Isles it is a somewhat local summer visitor, owing to its preference for commons, moorlands, and uncultivated ground, but ranges to the extreme north of the Scottish mainland, and breeds in some of the Inner Hebrides; while in Ireland it nests in almost every county, but is most frequent in Munster and Leinster, and scarce in W. Connaught and inland Ulster. During the winter months its migrations extend across Africa to Cape Colony and Natal, while the Asiatic forms winter in Arabia and India. [F. C. R. J.]

3. Migration.—A summer visitor, except to the Scottish isles, in most of which it is only of irregular occurrence: due account also must be taken of the very local distribution of the species in most parts of the country. A nightjar was recorded from Kent on 15th April 1902, but the species is seldom noticed in the British Isles until May, immigration being at its height about the middle of that month, dwindling towards the end. The species has been classed by the Migration Committee of the British Ornithologists' Club as one of those arriving along the whole south coast of England, but first and chiefly on the eastern half. But the migrations of this bird have been admittedly very difficult to trace with any certainty, owing to its nocturnal habits. Autumnal movement sets in soon after mid-August apparently, and the bulk of the birds have

left our shores by the middle of September, although stragglers have been noticed even in November in the mild south-west of England (cf. Saunders, *Brit. Birds*, 267; Ussher and Warren, *B. of Ireland*, 1900, p. 108; Ticehurst, *B. of Kent*, 1909, pp. 228, 230; and *B. O. C. Migration Reports*, i.-v., especially v. p. 270). [A. L. T.]

4. Nest and Eggs.—The eggs are laid on the bare ground or among dead vegetation, dry sticks, etc., sometimes in an open glade in a wood, or more frequently on bracken-covered commons or waste ground. (Pl. xxxiii.) When first laid they are often conspicuous, but are difficult to find when the bracken is high. The eggs are 2 in number, though one or two instances of 3 and even 4 have been recorded. They are much elongated and elliptical in shape, creamy or greyish white in ground colour, irregularly marbled, blotched and streaked with yellowish brown and very dark sepia as well as leaden-grey shell-markings. (Pl. F.) Average size of 100 eggs, $1.24 \times .87$ in. [31.5×22.28 mm.]. In the British Isles the eggs are rarely found before the last week of May, and very frequently not till June. Incubation, as noted in captivity and in the wild state, lasts from 16 to 18 days, and is chiefly performed by the hen, though she is at times relieved by the cock (*British Birds*, iii. 196; *Journal für Ornithologie*, 1909, 74, 75). As eggs have been found throughout July and up to August 19, as well as young in September, it is probable that two broods are reared, and this is confirmed by the fact that in captivity they have successfully bred twice in one season (*Journal für Ornith.*, loc. cit.). [F. C. R. J.]

5. Food.—Insects, chiefly beetles or noctuid moths; also grasshoppers, which are sometimes taken from the ground (Naumann). The young are fed by both sexes on insects by regurgitation. [F. B. K.]

6. Song Period.—The churring of the nightjar is heard from shortly after its arrival till towards the middle of August. It is recommenced about the end of August before the bird's departure (T. A. Coward, *Fauna of Cheshire*, i. 257). [F. B. K.]

The following species are described in the supplementary chapter on "Rare Birds" :—

Rednecked-nightjar, *Caprimulgus ruficollis* Temminck.

Egyptian-nightjar, *Caprimulgus aegyptius* Licht. [F. C. R. J.]



Photo by W. Farren

Nightjar's Nest and eggs



Photo by W. Farren

Nightjar and young

OF
INDIA

THE NIGHTJAR

[F. B. KIRKMAN]

To the superstitious the nightjar used to be an object of awe and dread. Perhaps he still is, and small wonder. His love of the dusk, his swift noiseless flight and mystic circles in the twilight, his eerie song uttered beneath the moon from the topmost twig of some dark solitary pine, the strange flattened head to which the bird owes the unlovely name of flying-toad, the still stranger, almost reptilian markings of his plumage, which serve to render him invisible even when crouching on the open ground in the broad light of day,—all this has made him seem unearthly, an embodied spirit of the dark, a thing of evil.

His reputed misdeeds have given him some of the names he still bears. He it was who came like a thief in the night and robbed cows and goats of their milk; hence his Latin name of *caprimulgus*, the goat-sucker. He inflicted upon cattle a fatal disease known by the singular name of puckeridge. It was given him to mark his guilt. He was the nighthawk, also the fern-owl. To call him hawk or owl was in later more modern times a sentence of death. Fortunately, like the owls, he has survived his evil reputation. The conquest of fact over fiction and superstition has made it clear that he is one of the best of man's bird friends. He is wholly innoxious,¹ and the actual benefit he confers in destroying injurious insects is difficult to overestimate; for it must be remembered that the great majority of insect-feeding birds hunt by day—the nightjar hunts after sunset.

Though the nightjar occasionally picks its food from the ground,

¹ R. Newstead, *Food of some British Birds*, p. 16. Board of Agriculture.

more often perhaps than is commonly supposed, it looks for it chiefly in the air. Like the Swifts and *Hirundinidae*, it may be seen twisting and turning in its flight this way and that as it snaps at some moth or flying beetle. Its gape is enormous, so much so that it seems to sunder the head in two. The corners on each side are furnished with strong black bristles, directed downward, which act like bars to prevent the victims from escaping before the mandibles have had time to close upon them. Some have imagined that the bird flies with the mouth kept wide open. Observation of individuals in captivity has not shown this to be the case.¹

It has also been thought that the bird at times catches its prey with its feet. This was the view of Gilbert White, who "saw it distinctly, more than once, put out its short leg while on the wing, and, by a bend of the head, deliver something into its mouth," and he adds that if "it takes any part of its prey with its foot, as I have now the greatest reason to suppose it does these chafers, I no longer wonder at the use of its middle toe, which is curiously furnished with a serrated claw."² But it is quite possible the action he describes was not a delivery of something into the mouth, but simple scratching of the head, beak, or angle of the gape. The nightjar, in common with other species, is infested by parasitic insects, and no doubt finds it necessary, like the swifts observed by Gilbert White himself, to "wriggle and scratch themselves in their flight to get rid of that clinging annoyance."³ There is at present no clear proof that the bird ever uses its foot to seize its prey. It has not been seen to do so in captivity, though food was thrown into the air for it to catch.⁴

The curious serrated or pectinated middle claw to which White

¹ *Journal für Ornithologie*, 1909, 56 (Dr. O. Heinroth).

² Letter to Pennant, 1771.

³ Letter to Barrington, September 28, 1774. The nightjar has been seen to scratch itself in captivity, thrusting its foot up between the wing and the body after the manner of swifts, woodpeckers, and the *Passeres* generally, not over the wing, as is said to be the habit of most non-Passerine species.—*Journal für Ornithologie*, 1909, 71-73 (Heinroth).

⁴ *Journal für Ornithologie*, 1909, 56.

drew attention remains to this day a mystery. It is not the body of the claw itself that is serrated, but its inner edge, which, as shown in the accompanying drawing, is extended to form a thin, flexible, but strong comb with about ten notches, the number varying from bird to bird, and from one foot to the other foot in the same bird. It has been thought that the use of the comb was to clean the gape bristles. Macgillivray denied this, on the ground that the bristles were too big to be inserted in the notches.¹ But an examination of the skins at the Natural History Museum, South Kensington, shows that some of the notches in each comb are wider than others, and are quite wide enough to admit a bristle almost up to its base. The real difficulty lies not in the width of the notches, but in the absence of satisfactory evidence that the bristles need so elaborate an instrument to keep them in order. The flycatchers (*Muscicapidæ*), and, indeed, some of the nightjars,² are without the comb, though they have the bristles. A third suggestion is that the pectinated claw assists the nightjar in maintaining its favourite perching position, which is *along* a bough. As, however, the pectinated fringe is on the inner side of the claw, is flexible and yielding, it is difficult to understand how it can be of much use in preventing side slips of the foot. For this purpose the points of the claws would prove more effective. Moreover, the nightjar is in the habit of crouching on the bough, so that the need for special supports is not apparent. And certain species, like the coursers and stone-curlew, which have the serrated claw, do not perch. A convincing explanation has, therefore, yet to be found, and for this we must wait till a much closer study of the habits of the species has been made.



PECTINATED CLAW OF A NIGHTJAR'S LEFT MIDDLE TOE SEEN FROM INSIDE.

(About $\times 4$ natural size.)

It is less difficult to find an explanation of the nightjar's habit of perching on a bough lengthwise, a position in which it is frequently

¹ *History of Birds*, iii. 633-644.

² *Nyctibius jamaciensis* has distinct bristles, but neither as stiff nor as large for the size of the bird as our nightjar. *Podargus strigoides* has not, strictly speaking, bristles, but bristly feathers (shafts with a few barbs.) Neither have the toe pectinated.

to be found during the day, and for hours at a time. It does not do so because unable to perch across, for it often adopts the latter position when uttering its churring notes in the twilight.¹ It is probably moved to do so by an instinctive sense that, thus placed, it is far better concealed than when projecting across the bough. Its peculiar coloration has certainly the effect of making it appear a part of the bough itself.

Like thrushes, robins, and many other species, the nightjar has its favourite trees and favourite perches, to which it will return again and again. There can be little doubt that it returns also each spring to the same breeding haunts, whither it resorts in May on its arrival from its winter quarters in Africa. That the male precedes the female, and that he occupies a given nesting-area where he awaits her arrival, appears equally certain.²

The nightjar's love-displays are known to us chiefly through the observations of a German naturalist, Dr. Heinroth,³ who succeeded in keeping a pair in captivity, and had the good fortune to watch them rear two broods in the same season. It was in April that a changed feeling towards his companion began to make itself apparent in the male. One of the first manifestations of this change must have been peculiarly gratifying to the object of his attentions—he refrained from snatching at the food which was offered her. He also began to follow her about the floor, and sit beside her. The actual display took the form of standing with the front part of the body quite still, and moving the tail and lower part of the body from side to side with untiring zeal and the regularity of a pendulum. In his more ardent moods he varied the performance by fanning the tail, thus bringing into view the pure white tips to the outer tail feathers, which, with the white spots on the wing, serve to distinguish the sexes. But all this was merely in the nature of a prelude. A soft churring note from the hen would send the enraptured bird flying in a fierce frenzy through

¹ Cf. Naumann, *Vögel Mitteleuropas*, iv. 248 (note by Dr. Hennicke).

² See above, vol. i. p. 421, footnote 2.

³ *Journal für Ornithologie*, 1909, 56-83.

Plate 79

Nightjar (male) in favourite position on
a branch

By A. W. Seaby



the room, smiting his wings with resounding force above his back, after which he would float awhile, his wings upraised and spread, his tail broad fanned, and so descend to his mate.

In the wild state this nuptial flight has of course greater scope. The male may then be seen floating down toward his mate in graceful curving flight,¹ or gyrating wildly round her in the air, smiting his wings with loud claps.

When about to smite the wings, the nightjar slackens his pace, gives a kind of leap in the air, at the same time straightening the wings, and striking the backs of them together.² This he may do several times in rapid succession. Both sexes are said to clap their wings when hawking for insects,³ and the male has been seen to do so when alarmed.⁴ Both sexes, again, perform the curious lateral movements of the tail above described. This they were observed by Mr. E. Selous to do in the wild state before changing places on the nest.⁵ Here the movements seemed to serve as a form of greeting; the birds wagged their tails because they were pleased, just as a dog wags his.

The nightjar's well-known churring or jarring song is another of his ways of manifesting his love. It is composed of two notes, which alternate, one being in a lower key than the other. The lower is said by Naumann to be uttered when the breath is inhaled, the higher when it is exhaled.⁶ The sound has been compared to the spinning of a wheel, the tearing of calico, and the rattling of a mowing-machine. It is uttered on a tree, often the topmost perch, or on the ground, and may be begun in the air before the bird alights, and finished after it has taken wing. It may be followed by other notes, which are difficult to describe. While the bird is churring, its under mandible vibrates, the upper less. The beak is almost closed,

¹ Ussher and Warren, *Birds of Ireland*, p. 104.

² Cf. Ussher and Warren, *loc. cit.*

³ *Zoologist*, 1800, 388-402. Note under date July 1 (E. Selous).

⁴ E. Selous, *Bird Life Glimpses*, p. 37.

⁵ *Zoologist*, *loc. cit.* ⁶ *Vögel Mitteleuropas*, iv. 249.

and is not sunk on the bough, a position assumed when the bird is suspicious or alarmed. The time that a bird will churr without stopping varies considerably; it may be a minute or less, or as much as six minutes. This song, if one may so call it, is of course heard at its best after sunset; it is recommenced before dawn, may be heard late at night, and occasionally by day.¹ Except during a part of August, it continues to be uttered almost up to the time of the bird's departure, from which it may be inferred that it expresses other feelings besides love.² The hen has been observed to churr on the nest, or at least to utter notes not unlike the churring of the male.³

The nest is merely a spot of bare ground, usually among bits of bark and dead wood, and is to be found on bracken-clad commons and similar places, also in open woodland glades. Judging from the proceedings of the captive pair watched by Dr. Heinroth, the male takes a part in the choice of the site. The male in question flew repeatedly on to both a leopard and a peccary skin that lay on the floor, and scratched vigorously with both feet. His mate, after following his movements with interest, used to push him aside and sit on the spot he had scratched, as if to assure herself of its suitability by personal investigation. She finally selected the peccary skin, on which she laid two eggs. She commenced sitting by day on the first egg as soon as it was laid, but judging from the evidence, apparently not at night. If this was so, it may be inferred that she began sitting by day not to incubate but to conceal the eggs, a precaution rendered necessary by the fact that their comparatively light coloration usually does not assimilate with the site, though no doubt the reverse is sometimes the case. When incubation proper began, the birds sat, of course, both by day and night.

¹ Dr. Heinroth in the *Journal für Ornithologie*, 1909, 73.

² T. A. Coward, *Fauna of Cheshire*, i. 257.

³ Naumann, *Vögel Mitteleuropas*, iv. 249; E. Selous in the *Zoologist*, 1899, 388, etc. Dr. Heinroth, in his observations on the nightjar in captivity, noted that the young male uttered a somewhat infantile churring at the age of five weeks. It also attempted to smite its wings and move its tail from side to side.—*Journal für Ornithologie*, 1909, 78.

The extraordinary resemblance of the bird itself to the bits of bark and wood among which it sits has often been noticed. So close is it at times, that though knowing the position of the nest, one may be quite unable to tell whether or not the bird is there. A good instance of this is given by Mr. Edmund Selous, one of the very few naturalists who has devoted close attention to the species. "It was midday in June, and a sunny day as well. I had left the bird in question for a little while, to watch another, and, when I returned, it was sitting in the same place, which I knew like my study table. My eye rested full upon it, as it sat, but not catching the outline of the tip of the wings and tail across a certain dry stalk, as I was accustomed to do, I thought I was looking at a piece of fir-bark—one of those amongst which it sat. I, in fact, looked for the eggs *upon* the bird, for I knew the exact spot where they should be; but, as I should have seen them at once, owing to their light colour, I felt sure they must be covered, and after gazing steadily for some time, all at once—by an optical delusion, as it seemed, rather than by the passing away of one—the piece of fir-bark became the nightjar."¹

The protective value of the nightjar's coloration is further increased by the fact that when sitting by day, possibly also at night, the bird keeps its eyes almost shut, leaving only a narrow transverse slit between the lids, through which to keep watch.² That this habit does not arise from any sensitiveness of the eyes to light is clear from the fact observed by Dr. Heinroth, that his tame nightjars would fix their eyes wide open upon the sun without showing any signs of discomfort. The bird's love of basking and taking dust-baths in the sunlight points to the same conclusion. The above authority also noted that the birds were able to make the pupils of both eyes converge at the same time towards the back angles of the lids, a fact which he tested frequently by holding food behind their heads. The expression that resulted was almost demoniacal, as may easily be imagined. This ability to keep watch on what occurs behind, without turning the

¹ *Bird Life Glimpses*, p. 40.

² Dr. Heinroth, *op. cit.*

head, and without making any visible movement, must be of undoubted value to the species. The same birds, when alarmed, used to compress their feathers. A photograph shows one of them in this position on the ground. The top of the head is in a line with the body, the beak horizontal, and the eyelids partly open. A bird, observed in the wild state, when alarmed on the nest adopted the same attitude, with the difference that she turned the beak upward. The nestling in down did the same. The compression of the feathers is not, of course, peculiar to the nightjar. It is frequently observed in the case of birds that are startled or alarmed, whether they be sitting in a nest or standing.

The coloration of the nightjar's plumage serves to protect not only its eggs, but no doubt also the bird itself, for, when surprised in a drowsy state during the day, it would probably find it no easy task to escape by flight from the swoops of the faster birds of prey. From animals, like the fox and stoat, that hunt by smell it would be protected by the fact that it seldom moves any distance upon the ground, and so leaves little or no trail.

What renders a protective coloration so necessary to the nightjar is its habit of laying its eggs on the bare ground, and not under cover, unless there be round the nest bracken or other vegetation which has had time to grow up, as is often the case later in the season. Why the bird does this is beyond my ability to explain. It may be that, having in the last resort to save itself by flight, it profits by not being in a confined space, with obstructions probably on every side except one, and that side in possession of the enemy. The same danger would face all the weaker animals that rear their young in holes, except those that have an emergency exit, or scent danger from afar.

Incubation is to some extent shared by the male nightjar. Dr. Heinroth's captive male took the female's place upon the eggs for a time in the morning, at midday, and in the evening. At night it was the female that sat, a fact ascertained by attaching

a piece of white paper to her back. That she undertook much more than her share of incubation was not due to any lack of zeal on the part of the cock. So eager was he at times to get on the eggs, that he would drag his mate off them. When he did not succeed, he sat down beside her and waited. When one of a pair does take the place of the other on the nest, the change is often accompanied by a display of conjugal amenities. The cock, for instance, arrives, settles beside the hen, presses against her, thus hinting plainly that it is his turn. "For a few seconds the pair sit thus, churring together, and, whilst doing so, both wag their tails—and not only their tails, but their whole bodies also—from side to side, like a dog in a transport of pleasure. Then all at once . . . the female darts away, leaving the male upon the eggs. She goes off instantaneously, launching, light as a feather, direct from her sitting attitude, without rising, or even moving, first. In other cases the cock bird settles himself a little farther away, and the hen at once flies off. There are infinite variations in the pretty scene, but the prettiest, because the most affectionate, is that which I have described."¹

The male nightjar's skill in incubation is not, however, equal to his zeal. Dr. Heinroth noted that his tame cock, unlike his mate, had some difficulty in keeping both eggs under him at the same time, and, when he succeeded in rolling one egg under him with his beak, he would sometimes lose the other. Still, he learned by experience, and towards the end of the breeding season practised the art with as great skill as the hen. The same initial lack of efficiency on the part of the male was noted by Mr. E. Selous when watching nightjars in the wild state. On one occasion this bird failed to get back to the nest an egg which had rolled out of it to the bottom of a little incline, where it remained wedged under a piece of bark. After several attempts and much toil, lasting nearly half an hour, he solved the difficulty by rolling the remaining egg out of the nest down to where the offending egg lay—an act showing an unusual degree of intelligence.²

¹ E. Selous, *Bird Life Glimpses*, p. 24.

² E. Selous, *op. cit.*, pp. 26-29.

The two brown and grey down-covered chicks are born after sixteen to eighteen days' incubation, and are able to move about when a day old.¹ In the course of a few days they leave the nest, either impelled by mere restlessness or by their eagerness to meet the parents returning with food. Later, when the returning parent is unable to find the whereabouts of the chicks, the latter run to where they hear the summoning notes. They may be found, therefore, several yards away from the nest, sometimes in one place, sometimes in another, sometimes back again in a place previously occupied. Both young and old, it may be added, run easily. The adults have been seen to pursue one another over the ground, "seeming, thus, to run without legs, for these were at no time visible."² Dr. Heinroth observed that in the daytime his tame nightjars, when nervous, and anxious to alter their position, would, instead of flying, creep away furtively over the floor.

Owing to the difficulty of seeing clearly in the dusk, the nightjar's method of feeding its young remained for long a mystery. In 1887 a well-known German naturalist, Dr. Liebe, announced that he had distinctly seen the old bird take not only the head, but almost half the body, of its offspring into its capacious mouth, and so let it feed itself on what was therein provided.³ This statement is nowadays chiefly interesting because it provides a good instance of the necessity of exercising caution in believing even one's own eyes. Curiously enough, in 1898, Mr. E. Selous, after watching the action of feeding for the first time, was of the same opinion as Dr. Liebe.⁴ Unlike the latter, however, he sought to verify his first impression, and successive observations left him certain that what actually happened was the exact opposite of what he at first thought had taken place. The old bird did not take the young bird's head into its mouth, it put its own into that of the young, and regurgitated the food down its throat. That this is the true version was

¹ *British Birds*, iii. 196.

² E. Selous, *op. cit.*, p. 37.

³ Liebe's statement is quoted in full in Naumann's *Vögel Mitteleuropas*, iv. 251 (published 1901), where it is assumed to be correct.

⁴ *Zoologist*, 1899, 486.

later put beyond all doubt by Dr. Heinroth, who in 1909 published a photograph of a young bird being fed by its parent in the way described.¹

When wanting to be fed, the young come from under the parent, turn, rise, and touch or seize its beak. If the old bird is not prepared to feed them, it may simply ignore these hints, in which case the young retire disappointed, or, if worried, it may lift the head, sometimes lifting a chick at the same time, so that its little body is seen dangling for a moment in the air. When wanting to give food, the parent utters a crooning note, which serves as a summons. It may be heard uttering the same in the intervals of feeding—a sort of purring of content.²

Dr. Heinroth relates that the young indulge in a curious form of greeting among themselves, occasionally also used by them to the parents. They run to one another with neck and wings stretched upward, the body being held horizontal. This, he says, is confined to the young. In so far, at least, as the raising of the wings is concerned, this does not seem to be the case, for, according to Liebe, the old bird, when about to feed the young, may be seen approaching them with wings upraised and quivering.³ The same is recorded of an American nighthawk. This bird fed its young on fireflies, and as it moved forward through the dusk, its great mouth seemed all aglow each time it opened it to utter its harsh call-note.⁴

Another of Dr. Heinroth's discoveries was that the nightjar might have a second brood in the same season. His tame pair hatched out their first two young on June 20 and 21. On the 3rd and 5th of July two eggs were laid in the same nest, that is, when the young of the first brood were not a fortnight old. The second brood was hatched after eighteen days, during which time the older chicks were fed by the male parent. They continued to be fed after the birth of the

¹ *Journal für Ornithologie*, 1909, 28. Mr. Selous' observations will be found in full in the *Zoologist*, 1899, and in *Bird Life Glimpses*, chapter ii.

² Heinroth, Selous, *op. cit.*

³ Naumann, *Vögel Mitteleuropas*, iv. 251.

⁴ Herrick, *Home Life of Wild Birds*, p. 82.

younger brood. The fact that in the wild state eggs and young are found late in the season point to the probability of a second brood being customary.

The nightjar will seek to draw the attention of an intruder from its young by feigning to be injured. It will do this, not only on the ground, but in flight. Its behaviour on such occasions is subject, as might be expected, to considerable variation. One bird may be more courageous or feel more strongly than another. Again, a bird disturbed during the heat of the day, when drowsy, is not likely to show as much energy as in the evening, when wide-awake and full of vitality. Much also depends upon the weather conditions, which often have an extraordinary effect upon the spirits of birds. No description, therefore, of an act of feigning injury will apply to all cases, but the general features remain much the same. A fairly typical account is the following, given by a French ornithologist. A hen bird that he disturbed from a nest with young flew off suddenly, and dropped almost immediately to the ground. On being approached it again flew off, "as if wounded," and again alighted on the ground, where it remained with its wing spread out, the tip touching the soil. The convulsive movements of the shoulder made it appear as if the bird were doing its best, but in vain, to raise the wing. Nearer approach caused it to resume its halting flight until close to a small oak, when it dropped the pretence, and finally alighted lengthwise on a bough. On a second occasion the same bird, after starting away in broken flight and alighting as before, returned and hovered near the intruder, uttering a harsh note.¹

This account describes three distinct movements of the bird, the feigning on the ground, the feigning in the air, and the hovering about the intruder.

The feigning on the ground has been somewhat differently described by Mr. Selous in the case of a bird, which he took to be the hen. When disturbed by his approach to the young, she "used

¹ *Revue Française d'Ornithologie*, 7 Avril 1910, p. 186 (R. Reboussin).

always to spin, in the most extraordinary manner, over the ground, looking more like an insect than a bird, suggesting by her movements those of a bluebottle that has got its wings scorched in the gas, and fallen down on the table. Whilst she was doing this, the chicks would sometimes run away, but quite as often one or both of them would remain where they were—apparently quite unconcerned—and allow me to take them up.” After the feigning came the hovering. “She would come quite near me, hover about, dart away and then back again, sit on a thistle-tuft, leave it, as though in despair, and at last re-alight on the ground, where she kept up a loud, distressed kind of clucking, which, at times, became shriller, rising, as it were, to an agony. The male was a little less moved. Still, he would fly quite near, and often clap his wings above his back. I cannot, now, quite remember whether the male ever began by spinning over the ground, in the same way as the hen, but if he did, it did not last long, and he soon took to flight.”¹

When feigning in flight, the nightjar has been described as throwing itself about in the air, as if its wings were broken,² and as fluttering along above the bracken with outspread tail and drooping wings.³ Occasionally the behaviour of the bird falls under none of the three heads above given. A hen bird which had young, for example, flew, when flushed, to the branch of a tree, “where, depressing and expanding her tail below the bough, and drooping and shivering her wings, she uttered a low croaking note at intervals. After a few seconds she became motionless and silent.” Next day the cock was seen doing exactly the same, uttering a constant *quik, quik quik*, distinct from the usual *co-ik*. He also repeatedly hovered.⁴ On another occasion a cock, disturbed in its haunt, flew “with both wings uplifted and tail spread out awry. In this attitude he not only progressed for some distance with an undulatory movement, but wheeled

¹ *Bird Life Glimpses*, p. 36.

² Ussher and Warren, *Birds of Ireland*, p. 106.

³ T. A. Coward, *Fauna of Cheshire*, i. 257.

⁴ Coward, *loc. cit.*

round and went in another direction without flapping his wings." He uttered a note syllabled as "wheep." In this case, however, it is not clear that the bird felt anxiety about its young.¹

The *co-ik* above mentioned is the nightjar's usual note in flight. It is no doubt a call-note, but what other meanings it possesses have yet to be fully determined. The *quik, quik* is evidently used to express alarm. There is, in addition, the summoning note of the parent when ready to feed the young, syllabled by Dr. Heinroth as *kurrrr*, anglicised, *kourrrr*. The call-note of the young is a plaintive *piep*, which is replaced later by the *co-ik*. According to Mr. Selous the latter have another note, which he syllables as *quir*.² The churring song has already been described. Outside the breeding season, and therefore after he has left our shores, the male utters a kind of gurgling note (German, *grollen*), which he accompanies with the familiar lateral movement of the tail.³

About the manner of the nightjar's departure in the autumn very little is known. It is said to migrate usually singly, also in pairs or families.⁴ On the other hand, "it has been seen assembling at Flamborough previous to migrating,"⁵ which points to gregarious travelling. Further observation is needed to settle the question.

¹ Ussher and Warren, *loc. cit.*

² *Zoologist*, 1899, 501, where still other notes are given.

³ Dr. Heinroth, *op. cit.*

⁴ Naumann, *Vögel Mitteleuropas*, iv. 247; Fatio, *Faune de la Suisse*, ii. 272.

⁵ Nelson, *Birds of Yorks.*, i. 266.

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