

ZS 72

BRITISH BIRDS

WITH WHICH WAS INCORPORATED IN JANUARY, 1917, "THE ZOOLOGIST."

**AN ILLUSTRATED MAGAZINE DEVOTED
CHIEFLY TO THE BIRDS ON THE BRITISH LIST**

EDITED BY

BERNARD W. TUCKER, M.A., F.Z.S., M.B.O.U.

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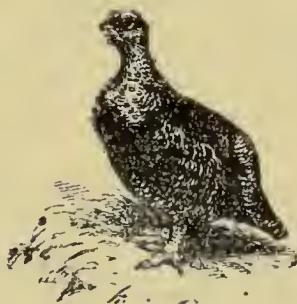
NORMAN F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

AND

A. W. BOYD, M.C., M.A., F.Z.S., M.B.O.U.

Volume XXXIX

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LIST OF ILLUSTRATIONS.

PAGE

<i>Plate</i>	1	LITTLE GULL INCUBATING : FRIESLAND, JUNE 16TH, 1945. (Photographed by Fr. Haverschmidt) facing	16
<i>Plate</i>	2	LITTLE GULL ALIGHTING ON NEST : FRIESLAND, JUNE 11TH, 1943. (Photographed by Fr. Haverschmidt) ...	... ...
<i>Plate</i>	3	LITTLE GULL WITH SUB-TERMINAL SPOTS ON PRIMARIES : FRIESLAND, JUNE 11TH, 1944. (Photographed by Fr. Haverschmidt) ...	... ... ... ... ...
<i>Plate</i>	4	LITTLE GULL WITH SUB-TERMINAL SPOTS ON PRIMARIES : FRIESLAND, JUNE 23RD, 1944. (Photographed by Fr. Haverschmidt) ...	... ... ... ... ...
<i>Plate</i>	5	LITTLE GULL'S NEST WITH FOUR EGGS : FRIESLAND, JUNE 18TH, 1944. (Photographed by Fr. Haverschmidt) ...	... ...
<i>Plate</i>	6	NESTLING OF LITTLE GULL : FRIESLAND, JUNE 18TH, 1944. (Photographed by Fr. Haverschmidt) ...	... ... facing	17
COMPARISON OF THE DISTRIBUTION OF SONG THROUGH THE DAY IN THE "AUTUMN" AND "SPRING" SONG-PERIODS OF THE WHITE WAGTAIL IN EGYPT. A. 1941-1942. B. 1943-1944. (Major P. H. T. Hartley)				
<i>Plate</i>	7	ROUGH-LEGGED BUZZARD (<i>Buteo l. lagopus</i>) AT NEST. (Photographed by H. N. Southern) ...	... facing	46
<i>Plate</i>	8			
<i>Plate</i>	9	UPPER—MALE KENTISH PLOVER ON EGGS. LOWER—FEMALE KENTISH PLOVER INCUBATING. (Photographed by Fr. Haverschmidt)		
<i>Plate</i>	10	ROCKALL, MAY 27TH, 1945. 24 OR 25 GUILLEMOTS VISIBLE ON BROAD LEDGE. (R.A.F. official photo : Crown copyright reserved) ...	... ... ... ... ... facing	49
<i>Plate</i>	11	HEAD OF LESSER WHITE-FRONTED GOOSE (<i>Anser erythropus</i>). (Photographed by Gavin Maxwell) ...	... facing	50
<i>Plate</i>	12	LESSER WHITE-FRONTED GOOSE (<i>Anser erythropus</i>). (Photographed by Peter Scott) ...		
<i>Plate</i>	13	WHITE-FRONTED GOOSE (<i>Anser albifrons</i>). (Photographed by J. Hoskin) ...		
<i>Plate</i>	14	LESSER WHITE-FRONTED GOOSE (<i>Anser erythropus</i>). (Photographed by Peter Scott) ...	... facing	81
MAP SHOWING REGIONAL VARIATIONS IN AVERAGE CLUTCH-SIZE OF THE ROBIN. (David Lack)				
<i>Plate</i>	15	CIRL BUNTING (<i>Emberiza c. cirlus</i>). MALE AT NEST : SOMERSET, 1939. (Photographed by George Yeates) ...	facing	107
<i>Plate</i>	16	CIRL BUNTING (<i>Emberiza c. cirlus</i>). PAIR AT NEST. (Photographed by George Yeates) ...	... facing	112
<i>Plate</i>	17	MARSH-WARBLER (<i>Acrocephalus palustris</i>) AT NEST : SOMERSET. (Photographed by George Yeates) ...	... facing	113
<i>Plate</i>	18			
<i>Plate</i>	19			
<i>Plate</i>	20	NEST OF LAPWING WITH SIX EGGS. (Photographed by Eric Hosking) ...	... facing	144
				145

LIST OF ILLUSTRATIONS.

	PAGE
<i>Plate 21 THREE-TOED WOODPECKER (<i>Picoides t. tridactylus</i>) : MALE AT NEST, LAPLAND, 1937. (Photographed by H. N. Southern)</i>	<i>facing</i> 176
<i>Plate 22 THREE-TOED WOODPECKER (<i>Picoides t. tridactylus</i>) : FEMALE AT NEST, LAPLAND, 1937. (Photographed by H. N. Southern)</i>	<i>facing</i> 177
GRAPHS SHOWING MEAN TEMPERATURE OF COLDEST WINTER MONTH AND INDEX OF BREEDING POPULATION OF HERONS. (W. B. Alexander)	203
<i>Plate 23 YOUNG MONTAGU'S HARRIERS : NORTH WALES, JUNE 24TH, 1945. (Photographed by A. W. Colling) ...</i>	<i>facing</i> 240
<i>Plate 24 } YOUNG MONTAGU'S HARRIERS : NORTH WALES, JUNE 30TH,</i> <i>Plate 25 } 1945. (Photographed by A. W. Colling)</i>	
<i>Plate 26 YOUNG MONTAGU'S HARRIERS NEARLY FLEDGED : NORTH WALES, JULY 8TH, 1945. (Photographed by A. W. Colling).</i>	
<i>Plate 27 } YOUNG MARSH-HARRIERS IN NEST : NORTH WALES, JULY 17TH,</i> <i>Plate 28 } 1945. (Photographed by A. W. Colling).</i>	
<i>Plate 29 YOUNG MARSH-HARRIERS : NORTH WALES, JULY 17TH, 1945. (Photographed by A. W. Colling)</i>	
<i>Plate 30 YOUNG MARSH-HARRIER PARTLY FEATHERED : NORTH WALES, AUGUST 4TH, 1945. (Photographed by A. W. Colling)</i>	<i>facing</i> 241
SKETCH-CHART TO ILLUSTRATE SOME FURTHER BIRD-NOTES FROM THE NORTH ATLANTIC. (E. M. Nicholson) ...	<i>facing</i> 265
<i>Plate 31 } GRIFFON VULTURE (<i>Gyps fulvus</i>) AT NEST : S. SPAIN, 1935.</i> <i>Plate 32 } (Photographed by R. Atkinson) ...</i>	<i>facing</i> 272
<i>Plate 33 }</i>	
<i>Plate 34 GRIFFON VULTURE (<i>Gyps fulvus</i>) DISPUTING ACCESS TO CARCASE : S. SPAIN, APRIL, 1935. (Photographed by George Yeates)</i>	
<i>Plate 35 GRIFFON VULTURES (<i>Gyps fulvus</i>) at CARCASE. S. SPAIN, APRIL, 1935. (Photographed by George Yeates).</i>	
<i>Plate 36 VARIETIES OF THE ROBIN BASED ON SKINS IN THE CLANCEY COLLECTION. A. NORMAL TYPE. B. VARIETY WITH DARK CINEREOUS SQUAMIFORM MARKINGS ON SIDES OF LOWER BREAST. C. A SIMILAR VARIETY IN WHICH THE SQUAMIFORM MARKINGS EXTEND OVER PART OF THE RUFOUS BREAST. facing</i>	273
<i>Plate 37 REED-WARBLER. NEST PARTLY STRIPPED AND MATERIAL USED FOR CONSTRUCTION OF A NEW NEST BELOW IT ; PHOTOGRAPHED AFTER ABANDONMENT OF THE SECOND NEST. (Photographed by Peter Hill) ...</i>	<i>facing</i> 304
<i>Plate 38 REED-WARBLER. MALE COMING TO NEST DURING THUNDER-STORM. (Photographed by Peter Hill)</i>	

LIST OF ILLUSTRATIONS.

PAGE

<i>Plate</i> 39 REED-WARBLER. MALE SHELTERING INCUBATING FEMALE DURING THUNDERSTORM. (<i>Photographed by Peter Hill</i>)	
<i>Plate</i> 40 NESTING GANNETS ON THE WESTERN STACK OF LES ETACS. (<i>Photographed by R. Dobson</i>)	
<i>Plate</i> 41 ORTAC : EAST SIDE, SHOWING MAIN PART OF NEW GANNETRY. (<i>Photographed by R. Dobson</i>)	
<i>Plate</i> 42 UPPER—LES ETACS, SHOWING SITE OF NEW GANNETRY ; WESTERN EDGE OF ALDERNEY IN FOREGROUND. LOWER—MAIN GANNET COLONY ON NORTHERN SLOPE OF THE WESTERN STACK OF LES ETACS. (<i>Photographed by R. Dobson</i>) facing	305
MAP SHOWING RELATION OF THE NEW COLONIES RELATIVE TO NEAREST EXISTING COLONY ON GRASSHOLM	310
MAP SHOWING POSITIONS OF ORTAC AND LES ETACS, WITH REFERENCE TO ADJACENT ISLANDS OF THE CHANNEL ISLAND GROUP ...	311
IRISH COAL-TIT : DIAGRAM SHOWING POINTS AT WHICH A MARKED BIRD WAS OBSERVED OVER A PERIOD OF TWENTY-THREE MONTHS. (Robert F. Rutledge)	331
<i>Plate</i> 43 IRISH COAL-TIT. TYPICAL IVY-COVERED HAWTHORN USED FOR ROOSTING : ROOST WAS IN SHADED CAVITY NEAR CENTRE. (<i>Photographed by J. S. Barlee</i>) facing	336
IRISH COAL-TIT. TYPICAL ROOSTING HOLE IN ROTTING ASH-TREE, 11FT. ABOVE GROUND. (<i>Photographed by J. S. Barlee</i>)	
<i>Plate</i> 44 OYSTER-CATCHER. NEST WITH THREE EGGS ON TOP OF POLLARD WILLOW. JUNE 12TH, 1945. (<i>Photographed by Fr. Haverschmidt</i>)	
OYSTER-CATCHER. NEST IN COPSE. JUNE 14TH. 1944. (<i>Photographed by Fr. Haverschmidt</i>)	
<i>Plate</i> 45 OYSTER-CATCHER. UPPER—BIRD ABOUT TO SETTLE ON NEST ON POLLARD WILLOW. JUNE 12TH, 1945. LOWER—NESTING IN COPSE. MAY 25TH. 1944. (<i>Photographed by Fr. Haverschmidt</i>).	
<i>Plate</i> 46 LONG-EARED OWL. UPPER—LIME TREE WITH SIX NESTING BASKETS FOR DUCKS : THE OWL WAS NESTING IN THE BASKET ON THE LEFT. (<i>Photographed by Fr. Haverschmidt</i>). LOWER—LONG-EARED OWL INCUBATING IN NESTING-BASKET FOR DUCKS, MAY 25TH, 1945. (<i>Photographed by Fr. Haverschmidt</i>) facing	337

ERRATA.

- p. 83 Under STARLING, line 4, for "south-west" read "south-east."
 p. 266 Footnote : for "Atlantic Shearwater" read "North Atlantic Shearwater."
 p. 295 Last line : for "5,200 sq. yards" read "520 sq. yards."

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THE HANDBOOK OF BRITISH BIRDS

By H. F. WITHERBY, M.B.E., F.Z.S., M.B.O.U., Editor; Rev. F. C. R. JOURDAIN, M.A., M.B.O.U., H.F.A.O.U., NORMAN F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U., C.F.A.O.U. and BERNARD W. TUCKER, M.A., F.Z.S., M.B.O.U.

133 Coloured and 24 Monochrome Plates figuring all the species, 300 Text Figures and 37 Maps.

Each of the 520 birds is fully treated in the following sections :—

HABITAT, FIELD-CHARACTERS AND GENERAL HABITS,
VOICE, DISPLAY AND POSTURING, BREEDING, FOOD,
BRITISH DISTRIBUTION, MIGRATIONS, DISTRIBUTION
ABROAD, DESCRIPTION (all plumages), CHARACTERS
AND ALLIED FORMS.

A third impression (not differing in any essential from the second) will be published during 1945 or early 1946. Copies of the Supplementary Additions and Corrections appearing in the second and subsequent impressions (24 pages) can now be supplied to holders of the first impression, price 1s. 2d., post free.

Notice will be given in these columns shortly before the third impression is ready.

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CONTENTS OF NUMBER I, VOL. XXXIX, JANUARY I, 1946.
PAGE.

Editorial	I
A Survey of the Status of Birds breeding in Cornwall and Scilly since 1906. By Lt.-Col. B. H. Ryves and Miss H. M. Quick	3
The Little Ringed Plover in the London area in 1945. By E. O. Höhn, E. R. Parrinder and E. G. Pedler	...	...	...	...	...	...	...	12
Notes on the Breeding of the Little Gull. By Fr. Haverschmidt. M.B.O.U.	...	...	...	...	...	...	...	14
Some Notes on the Nesting of the Green Woodpecker. By N. Tracy	...	...	...	...	...	...	...	19
Notes :—								
Courtship display of Chaffinch (Flt.-Lt. G. Beven)	...	...	...	...	...	...	...	23
Unusual forms of Chaffinch song (Major P. H. T. Hartley, F. C. Bromley)	...	...	...	...	...	...	...	23
Display of Willow-Warbler (R. H. Brown)	...	...	...	...	...	...	...	24
Courtship-feeding and display-flight of Willow-Warbler (R. H. Dunt)	...	...	...	...	...	...	...	25
Marsh-Warblers in Herefordshire (L. Smith)	...	...	...	...	...	...	...	25
Young Sedge-Warblers returning to nest (D. R. Anderson)	...	...	...	...	...	...	...	26
Male Blackbird attempting to feed female (A. Manning)	...	...	...	...	...	...	...	26
Great Spotted Woodpecker breeding in Clackmannan (W. Beaton and J. Eric Wheater)	...	...	...	...	...	...	...	26
Marsh-Harriers in Suffolk, Sussex and Yorkshire (Peter Pardoe, D. D. Harber, J. Lord and G. H. Ainsworth)	...	...	...	...	...	...	...	27
First breeding of Fulmar Petrel in North Wales (James Fisher, R. G. Newton, A. R. Sumerfield and J. E. S. Dallas)	...	...	...	...	...	...	...	28
Wing-clapping of Turtle-Dove (John Tooby)	...	...	...	...	...	...	...	29
Turtle-Dove in Orkney in summer (Flying-Officer G. H. E. Young)	...	...	...	...	...	...	...	30
Black-tailed Godwits in London (Dr. G. Carmichael Low and R. Preston Donaldson)	...	...	...	...	...	...	...	30
Turnstones using elevated perches (B. A. Richards)	...	...	...	...	...	...	...	30
Redshanks rearing two broods (W. L. Colyer)	...	...	...	...	...	...	...	31
Common Tern, Lesser Black-backed Gull and Garganey breeding in Nottinghamshire (R. J. Raines)	...	...	...	...	...	...	...	31
Short Notes :—								
The cold spell in January, 1945. Variant <i>Motacilla flava</i> in Sussex. Juvenile Redwing in Kent in July	...	...	...	...	...	...	...	32

EDITORIAL.

We feel sure that the increase in the size of *British Birds* which has already been announced will be welcome to readers: the restoration of something like the pre-war number of pages will

make possible the treatment of a wider range of subjects in each number and will also substantially relieve the severe pressure on our space, which has been responsible recently for the considerable delays in publication for which we have had to ask the indulgence of contributors.

We have also announced our aim of increased circulation. It is our confident belief that the widest possible dissemination of *British Birds* is in the interests of field ornithology and that such an increase can be attained while at the same time fully preserving the high standards which Mr. Witherby set during his long editorship. We believe that there are still a large number of people in the British Isles who are not at present subscribers but whose interest in birds is sufficiently real to appreciate a magazine which, while "popular" in the sense of being supported and written principally by amateurs, is at the same time scientific in the sense of being authoritative and insisting on originality and accuracy in its subject matter. Some such observers may have been deterred hitherto from subscribing by considerations of cost, others do not even know of the magazine. With the active collaboration of Messrs. Witherbys every effort is being made to reduce these factors, but to a very large extent we are dependent on the good offices of our present supporters to make the magazine more widely known and we invite the active assistance of all our readers in this.

Though it is not our intention to alter the character of the magazine in any essential respect, we hope as part of our general aim of keeping readers abreast of important developments in our subject to be able to publish from time to time review articles dealing with recent progress in particular fields of investigation. We mention this, however, rather as an intention for the future than one which can be put into practice at once, since the publication of such surveys must depend not only on some relief of the present congestion of original papers and notes, but also on those who can write them finding sufficient leisure for the purpose, which is often a matter of difficulty under present conditions. We propose, however, as part of our programme of increased illustration, to introduce in the next number a series of photographic studies of some of the rarer, or rarely photographed, species on the British List. Our reason for doing so is not any wish to foster the notion that the rare birds are more worthy of study than the commoner ones, but simply that excellent photographs of most of the breeding birds of the British Isles, both common and rare, are available in a score of books, and in many cases in back numbers of our journal, whereas photographs of many of our winter and passage migrants and rare visitors are not.

Lastly, we may mention that now that the war is over we are glad to be able to add the names of Messrs. D. Lack and E. M. Nicholson and Major W. M. Congreve to our panel of honorary consultants originally announced on p. 2 of Vol. xxxviii. B.W.T.

A SURVEY OF THE STATUS OF BIRDS BREEDING IN CORNWALL AND SCILLY SINCE 1906

BY

LT.-COLONEL B. H. RYVES AND Miss H. M. QUICK.

THE last comprehensive survey of the birds of Cornwall and Scilly was that undertaken by James Clark in 1906 and published in the Victoria County History of Cornwall.

We take that paper as the basis of the present survey, as it seems to be regarded by Clark's surviving contemporaries as more reliable than that which preceded it in 1902, but a certain caution is advisable in accepting all Clark's statements, as he was not a native of the county, and his evidence was largely second-hand.

Since 1906, very little literature is to be found concerning the birds of Cornwall until the formation of the Cornwall Bird Watching and Preservation Society in 1931. As regards the birds of Scilly, many unconnected notes and articles have appeared from time to time, mainly the results of short visits to the islands. It will therefore be obvious that the status of birds at Scilly today cannot be established as adequately as is to be desired. Such is particularly the case because there have been changes among the birds and changes are still taking place.

In this paper, we have endeavoured to connect as far as is discernible the trend of changes in their relationship between the islands and the mainland, and vice versa.

It will be noticed that we lay considerable stress on the conditions of bird-life in the Land's End peninsula (West Penwith district), which comprises, roughly, the whole toe of the county cut off at a line drawn from Hayle to Marazion. If there were another inundation such as produced Mount's Bay, the river valleys between Hayle and Marazion would fill up and convert the peninsula into an island.

By reason of its configuration and the close proximity of the sea at all but its eastern boundaries, the peninsula may be described as an arrival and dispersal area of birds. As might be expected in an area so confined and almost isolated, there is a marked diminution of resident species when compared with their general distribution in the rest of the county. In short, there is not sufficient "elbow room." Such conditions apply to no other part of Cornwall.

At Scilly, the comparatively small number of resident species is not so surprising as might at first be thought. The majority of the islands and rocks are rugged outcrops of granite, devoid of trees and succulent herbage. Many of these rocks are eminently suited to sea-birds, but not to most of the small passerines (notably finches and warblers). Tresco is an oasis among these barren rocks, but it is limited in extent, though rich in trees and undergrowth. Trees occur on other inhabited islands, but are nowhere profuse. It may be worth mention that but few of the barren islands possess tall and rugged cliffs, so desired by some of the *Corvidæ* and hawks.

At the close of the present survey, we give in tabulated form the gist of our conclusions in the text. In the conclusions themselves, species are dealt with first for the mainland, followed by Scilly. Where there is no reference to the latter at all, it is to be understood that the species concerned is non-resident on the islands.

We are greatly indebted to Mr. Humfrey Wakefield for his valuable assistance and for his special records. Many of his observations (some quite original) are incorporated with our own. He was on the islands during three of the summer months of 1943, when he studied the fluctuations of most of the breeding birds. He is surely to be congratulated on his discovery then of the reappearance of breeding Roseate Terns.

We are also greatly indebted to Major A. A. Dorrien Smith, D.S.O., for much valuable unpublished information, with regard to the Isles of Scilly, to Mr. A. W. H. Harvey for unpublished records and observations extending over many years in the Land's End district, and to Mr. W. B. Alexander for searching the literature for Scilly and his kind help.

We have also to record our grateful thanks for the help and advice given to us, both in connection with birds on the mainland and Scilly by the following kind collaborators:—R. H. Blair, E. H. W. Bolitho, C. J. F. Coombs, S. Craddock, J. M. Ferrier, H. G. Hurrell, J. M. Macmillan, L. Major, R. H. Meares, Mrs. Meares, E. R. Parrinder, A. K. Peter, L. Rendell, Mrs. Ryves, C. J. Stevens, J. T. Tamblyn, W. R. Taylor, D. Valentine and T. J. Willcocks.

THE STATUS.

RAVEN (*Corvus c. corax*).

Status generally maintained, well distributed throughout the county, both on the coasts and inland.

CARRION-CROW (*Corvus c. corone*).

Further increase in the last 20 years; now distributed throughout the county, nesting in cliffs, trees, and bushes.

Scilly: Was breeding regularly in 1906 (Clark). In 1923 no bird was seen or heard (Wallis), nor in 1938 (Harvey), but in 1943 one pair bred (Dorrien Smith, *in litt.*).

ROOK (*Corvus f. frugilegus*).

No marked change in status as abundant resident. Rookeries fluctuate in size; new sites are occupied, but often quickly abandoned.

Scilly: Does not breed, though in 1922 a few pairs began building, but soon gave up and left the islands (Dorrien Smith, *in litt.*).

JACKDAW (*Corvus monedula spermologus*).

Still most abundant and has probably reached saturation point. Huge numbers breed on the coastal cliffs.

MAGPIE (*Pica p. pica*).

Slight increase in some parts. Very common everywhere except on the coast itself. Breeds in low bushes as well as tall trees.

BRITISH JAY (*Garrulus glandarius rufifergum*).

The winter invasion of 1923-24 (*Brit. Birds*, Vol. xviii, p. 164), did not materially affect the resident stock. But later an increase was noticed in the northern parts of the county, and there occurred a gradual spread to the west, where it now breeds thinly.

CHOUGH (*Pyrrhocorax p. pyrrhocorax*).

Decrease in the early part of the 20th Century, but for the last 20 years has maintained a level of a few pairs only, breeding at wide intervals. Confined to the north coast between Perranporth and Tintagel. Always a small number of non-breeding birds present.

STARLING (*Sturnus v. vulgaris*).

Great increase since 1906 : now widely distributed in moderate numbers over all parts, but still sparsely in the Land's End peninsula.

Scilly : Has gradually spread to the islands, and began breeding in 1911-13 (Wallis). In 1938 was presumed to be breeding on the five inhabited islands, though only actually confirmed on St. Mary's (Harvey), and in 1943 was also recorded from the uninhabited islands of Gugh and Annet (Parrinder).

GREENFINCH (*Chloris ch. chloris*).

Increase in last few years, and now generally distributed and fairly common, though numbers tend to fluctuate.

Scilly : A winter visitor only in 1906 (Clark) ; was presumed breeding in 1923 (Wallis) ; 1924 (Boyd) and 1938 (Harvey), and is now definitely established as a resident on Tresco and St. Mary's (Dorrien Smith, *in litt.*).

BRITISH GOLDFINCH (*Carduelis c. britannica*).

Most marked increase during the last 20 years, and now widely distributed in all areas.

Scilly : Has spread to the islands, where it was presumed to be breeding on Tresco only in 1938 (Harvey). The first definite record of breeding on Tresco was in 1940 (Dorrien Smith). Had apparently not bred previous to these dates, as no mention made by Wallis or Robinson. In August, 1943, a family party was seen on St. Mary's, apparently the first summer record for that island (Wakefield, *in litt.*).

LINNET (*Carduelis c. cannabina*).

No general change, common and widely distributed, with some local decreases (Callington and Falmouth areas).

Scilly : Has increased and is now abundant in all suitable localities; is more plentiful than on the mainland (Harvey, 1938). This abundance was noted by Wallis as far back as 1923, and confirmed by Boyd in 1924.

BRITISH BULLFINCH (*Pyrrhula p. nesa*).

A tendency towards some increase ; not uncommon throughout the county, but scarcer in the west.

Scilly : Does not breed, and Dorrien Smith states, *in litt.*, that he has no record of this species having ever done so.

COMMON CROSSBILL (*Loxia c. curvirostra*).

No record on the Mainland.

Scilly: Reported by Dorrien Smith, *in litt.*, to have bred more than once about 1930.

BRITISH CHAFFINCH (*Fringilla cœlebs gengleri*).

No general change, now common and widely distributed in all areas; in the Land's End peninsula, though still plentiful, has definitely decreased.

Scilly: None seen in 1923 by Wallis or Robinson (though reported in song in May). In 1924 several were seen on Tresco and one was heard singing (Boyd). In 1938, found on Tresco only (Harvey). Now breeding on Tresco (Dorrien Smith, *in litt.*).

CORN-BUNTING (*Emberiza calandra*).

Marked decrease Newquay-Padstow coast, where plentiful up to 1934. Decrease not apparent in the Land's End peninsula. Normal habitat north coast from Land's End to Tintagel, with vacant stretches. Scarce Tintagel to Bude and on the south coast. Inland breeding occasional.

Scilly: Robinson saw none in 1914, but in 1923 found it not uncommon and breeding on St. Mary's, as did Boyd in 1924. One heard in song in 1930 and two in 1938 (Harvey). Doubtful if now breeding (Dorrien Smith, *in litt.*).

YELLOW BUNTING (*Emberiza c. citrinella*).

No change, common in all areas.

CIRL BUNTING (*Emberiza c. cirlus*).

Increased since 1906, but no great change recently except local decreases (Land's End and Callington areas). Thinly distributed except where there are woody-pasture lands, which it favours. Biggest distribution in mid-Cornwall.

REED-BUNTING (*Emberiza s. schæniclus*).

No change, sparsely distributed, occurring in all suitable localities, from sea-level valleys to the foot of Roughtor and Brown Willy and in Bolventor-Fowey valley.

HOUSE-SPARROW (*Passer d. domesticus*).

Status difficult to assess; has probably decreased in the county as a whole. Great decrease in various districts (Torpoint, Bude, Wadebridge, Mawgan, Par and Falmouth). Abundant in Callington and Penzance, and common in other areas.

Scilly: Recorded on Samson only in 1906 (Clark). Common on St. Mary's in 1923 (Wallis), and found in all suitable localities in 1938 (Harvey), tree-nesting being prevalent.

WOOD-LARK (*Lullula a. arborea*).

Evidence of some increase, though hardly common yet. Occurs throughout the county both on pasture and sandy tracts, but scarcer in the west; is liable to be overlooked. The status in Cornwall is a strange contradiction of the marked decrease in Southern England, as described in *British Birds*, Vol. xxxviii, p. 45.

Scilly: Breeding recorded on St. Mary's in 1933 (Dorrien Smith).

SKY-LARK (*Alauda a. arvensis*).

No noticeable change of status. Breeds most on uplands, but occurs also on lowlands. Is less common in the Land's End peninsula.

Scilly : In 1923 Robinson found birds fairly plentiful, but not breeding as freely as in 1914. In 1924, it was quite abundant on St. Mary's and singing on Bryher (Boyd). In 1938 it was found to be abundant, "more plentiful than on the Mainland" (Harvey). Now breeding in small numbers (Dorrien Smith, *in litt.*).

TREE-PIPIT (*Anthus t. trivialis*).

No change, uncommon in the county as a whole, and absent in the Land's End peninsula. Breeds sparsely, but regularly, in mid-Cornwall and at Carclew. May breed irregularly in the extreme north of the county.

Scilly : Not recorded by Clark. A nest found in 1914 by Robinson is the only record of breeding.

MEADOW-PIPIT (*Anthus pratensis*).

No change, still common and generally distributed.

Scilly : No change, still a common breeder.

ROCK-PIPIT (*Anthus spinosus petrosus*).

No change, generally distributed along the coast.

Scilly : No change, still a common breeder.

BLUE-HEADED WAGTAIL (*Motacilla f. flava*).

No change, rare. Bred Marazion marsh 1923, '24 and '25 (Harvey). Probably bred there again in 1944 (A. W. H. Harvey, *in litt.*).

YELLOW WAGTAIL (*Motacilla flava flavissima*).

Still rare : recorded by Clark as "nesting several times in mid and East Cornwall," but now the only records are from the west, where one or two pairs breed yearly at Marazion marsh (A. W. H. Harvey, *in litt.* and Harvey).

GREY WAGTAIL (*Motacilla c. cinerea*).

No change in general status, though has spread west of Truro since 1906, and is generally, though thinly, distributed over the county; except in the Land's End peninsula, where still rare (*cf. Brit. Birds*, Vol. xviii, p. 165).

PIED WAGTAIL (*Motacilla alba yarrellii*).

Slight increase in parts where rare in 1906 ; otherwise no change, common and generally distributed. A strange but definite decrease noted in the Mawgan district.

Scilly : In 1906 was said by Clark to be "nesting on all the larger islands." Has not been recorded since by any observer, and is stated by Dorrien Smith, *in litt.*, to be non-resident.

BRITISH TREE-CREEPER (*Certhia familiaris. britannica*).

No change ; widely but somewhat thinly distributed, though easily overlooked.

BRITISH NUTHATCH (*Sitta europaea affinis*).

No change ; generally distributed and fairly common, but scarcer in the west, though has extended its range in that direction.

BRITISH GREAT TIT (*Parus major newtoni*).

No change; generally distributed, the second commonest tit.

Scilly: Has spread to the islands and is now a regular breeder, Was not breeding in 1906, but was doing so in 1923 (Wallis and Robinson). In 1930 was noted by Boyd to have made "a slight but definite increase." In 1938 was seen on three islands (Harvey). The status was found unchanged in 1943 (Parrinder) and in the same year was breeding abundantly on St. Mary's, principally in dry-stone walls (Wakefield, *in litt.*).

BRITISH BLUE TIT (*Parus cæruleus obscurus*).

No change; generally and widely distributed, the commonest tit.

BRITISH COAL-TIT (*Parus ater britannicus*).

No change; fairly well distributed, but hardly common, and scarce in some parts. Usually to be found where there are conifers.

BRITISH MARSH-TIT (*Parus palustris dresseri*).

No change; fairly generally but thinly distributed, scarcer than Coal-Tit.

BRITISH WILLOW-TIT (*Parus atricapillus klcinschmidti*).

No record of breeding, but has rarely been identified: at Mawgan in 1931 (Johnstone) and at St. John in January, 1938, and at Moditon Ham in December of the same year (Hartley).

BRITISH LONG-TAILED TIT (*Aegithalos caudatus rosaceus*).

No change; generally distributed with marked seasonal fluctuations. Increase in the last few years in the Land's End area (A. W. H. Harvey, *in litt.*).

SPOTTED FLYCATCHER (*Muscicapa s. striata*).

Decrease since 1906. Generally, but thinly, distributed, with seasonal fluctuations.

BRITISH GOLDCREST (*Regulus r. anglorum*).

No change; generally distributed in fair numbers. No set-back since the severe winter of 1916-17.

Scilly: Not recorded as breeding in 1906 (Clark), nor in 1923 (Wallis), but in 1924 "some numbers were seen on Tresco, where they had evidently bred" (Boyd). In 1938 birds were observed on Tresco, though not elsewhere (Harvey) and are now breeding on Tresco (Dorrien Smith, *in litt.*). In 1943 an adult pair seen on Tresco (Wakefield, *in litt.*).

CHIFFCHAFF (*Phylloscopus c. collybiæ*).

No change; well distributed, common in some localities where Willow-Warbler is scarce.

Scilly: No breeding recorded by Clark. Apparently first noted by Boyd in 1924 on Tresco, and again on Tresco only in 1938 (Harvey), but breeding not proved. Not seen in summer 1940 (Dorrien Smith) or in 1943 (Parrinder).

WILLOW-WARBLER (*Phylloscopus t. trochilus*).

No change; well distributed, common in some localities where Chiffchaff is scarce.

WOOD-WARBLER (*Phylloscopus sibilatrix*).

No change; uncommon. Breeds thinly in east Cornwall only (Tamar valley, round Callington and in the Glynn and Allen valleys). A pair believed to have probably bred at Carnanton in 1930-31, and nest found of a single pair near Nine Maidens in 1937 (Ryves). Probably bred near Feock in 1944 (Coombs, *in litt.*). Believed to breed Boconnoc and Looe.

GRASSHOPPER-WARBLER (*Locustella n. nævia*).

Evidence of increase since 1906. Breeds thinly in suitable places and has favoured localities in some areas, the most notable being round Kilkhampton, where it breeds almost thickly (Peter, *in litt.*), and, more thinly, near Crawford Bridge (Craddock, *in litt.*).

Scilly: Breeding has not been proved. Since 1906 the only record is in May, 1927 (J. G. Millais, *per* Dorrien Smith, *in litt.*).

REED-WARBLER (*Acrocephalus s. scirpaceus*).

No evidence of breeding now.

SEDGE-WARBLER (*Acrocephalus schænobænus*).

No change; well distributed throughout the county. Sometimes breeds some distance from water.

Scilly: Clark states in 1906 that this warbler was breeding freely on Tresco, and it is still doing so in the same locality, as well as on St. Mary's.

GARDEN-WARBLER (*Sylvia borin*).

No change; uncommon and local, unknown west of Truro. Breeds thinly in mid and east Cornwall, and in Wadebridge area is commoner than the Blackcap.

Scilly: Does not usually breed, but a pair bred on Tresco in 1943 (Parrinder, quoting Dorrien Smith).

BLACKCAP (*Sylvia a. atricapilla*).

No change; rare in the Land's End peninsula and in Callington area; scarce in Par and Launceston areas, and well distributed in most other districts, especially mid-Cornwall. Particularly numerous near Tamerton (Craddock, *in litt.*).

WHITETHROAT (*Sylvia c. communis*).

No marked change; generally common, but unevenly distributed, with notable seasonal fluctuations. The commonest warbler in open farm country.

LESSER WHITETHROAT (*Sylvia c. curruca*).

Not mentioned by Clark; very rare as resident. Only definite breeding records are at Crowlas, 1920 (Harvey) and Mawgan (Newquay), 1935 (Ryves). This conflicts with the conclusion of Alexander and Lack (*Brit. Birds*, Vol. xxxviii, p. 63).

DARTFORD-WARBLER (*Sylvia undata dartfordiensis*).

Big decrease; only record of breeding since Clark's time is in 1940 (see *The Handbook*, Vol. v, p. 292).

MISTLE-THRUSH (*Turdus v. viscivorus*).

No change; still widely distributed and fairly common. Definite increase in the Land's End peninsula.

Scilly: Absent in 1906 (Clark) and neither seen nor heard in 1923 (Wallis) or 1938 (Harvey). Has since spread to the islands and in 1939 and 1940 nested on Tresco (Blair and Dorrien Smith), where it is now resident (Dorrien Smith, *in litt.*).

BRITISH SONG-THRUSH (*Turdus e. ericetorum*).

No change; widely distributed and common.

Scilly: No change; still generally distributed.

RING-OUZEL (*Turdus t. torquatus*).

Marked decrease: possibly bred on Cheesewring in 1934 and 1935 (Willcocks). Believed still to breed very sparingly on Bodmin moors.

BLACKBIRD (*Turdus m. merula*).

No change; the commonest "thrush," very widely distributed.

Scilly: No change, still very abundant.

WHEATEAR (*Ænanthe æ. œnanthe*).

Evidence of decrease, especially in the Land's End peninsula and on Camborne North cliffs, but status at present stationary on the coast Polzeath-Tintagel. Still fairly common; breeds at intervals along the coast and also noted round Roughtor and Brown Willy.

Scilly: bred "sparingly" 1906 (Clark); in 1914 "fairly common on St. Mary's" (Robinson) and "seemed to have increased in 1923" (Wallis). Apparent decrease in 1938, "seen in a few places on the larger islands" (Harvey), and now "no longer breeds regularly" (Dorrien Smith, *in litt.*).

WHINCHAT (*Saxicola rubetra*).

No change; uncommon. Breeds on parts of Bodmin moors; no records elsewhere.

BRITISH STONECHAT (*Saxicola torquata hibernans*).

No change; common on the coast, and also breeds on uplands inland.

Scilly: No change. Very abundant in 1923 (Wallis), well distributed in 1938 (Harvey), common in 1944 (Dorrien Smith, *in litt.*).

REDBSTART (*Phænicurus ph. phænicurus*).

No longer believed to breed in Cornwall.

BLACK REDSTART (*Phænicurus ochrurus gibraltariensis*).

Not recorded as breeding in 1906, but recorded in 1929 and following years on the north coast (Witherby and Fitter). No evidence of spread of range, owing to wartime difficulty of observation.

BRITISH ROBIN (*Erithacus rubecula melophilus*).

No change; common in all areas.

Scilly: Common in 1906 (Clark), in 1923 (see conclusions of Wallis), in 1944 "common" (Dorrien Smith, *in litt.*).

BRITISH HEDGE-SPARROW (*Prunella modularis occidentalis*).

No change; common in varying types of country.

Scilly: No change; common.

WREN (*Troglodytes t. troglodytes*).

No change; common and widely distributed.

Scilly: No change; common.

BRITISH DIPPER (*Cinclus c. gularis*).

Evidence of decrease, particularly in mid-Cornwall (Mawgan). Still common in N.E. of county, but rarely found west of Truro.

SWALLOW (*Hirundo r. rustica*).

Marked decrease throughout the county. Population highest in the east, but not now common.

Scilly : No change noted since 1923 (Wallis) ; breeds regularly.

HOUSE-MARTIN (*Delichon u. urbica*).

Very definite and steady decrease, especially in mid and west Cornwall. The population decreases as the distance from Devon increases. Now almost rare. A cliff-nesting colony near St. Austell is recorded in the Canterbury School's Natural History Society Report for 1940-44.

Scilly : No breeding recorded up to 1906. In 1923, present on St. Mary's in June (Wallis) and in 1938 in most of the larger islands in June (Harvey), without nests being found. In June, 1943, there were several nests in Hugh Town, St. Mary's, and birds were seen collecting mud from the main street (Wakefield, *in litt.*).

SAND-MARTIN (*Riparia r. riparia*).

Marked decrease, notably in the Land's End and Camborne areas. Nesting colonies are few.

SWIFT (*Apus a. apus*).

No general change ; common and generally distributed, but local variations.

Scilly : No record of breeding up to 1906 (Clark). In 1923, though nesting not reported, had grown more common (Wallis). In 1938, present in fair numbers and apparently nesting on St. Mary's (Harvey). In June, 1943, at least two pairs were seen entering crevices in an old building on Peninnis Head, St. Mary's, (Wakefield, *in litt.*). Now definitely recorded as breeding (Dorrien Smith, *in litt.*).

NIGHTJAR (*Caprimulgus e. europaeus*).

No change ; breeds throughout the county in suitable habitats in moderate numbers. There is an excellent habitat near Truro (Carclew), where six or more pairs normally breed (Coombs, *in litt.*).

Scilly : In 1906, not recorded as breeding (Clark). B. W. Tucker states :—"I very clearly remember, as a boy in June, 1914, finding a nest with two eggs on Tresco." Song heard in the summer months in 1923 by Wallis (who reported that C. J. King had photographed a bird at nest), in 1937 (Valentine), and 1943 (Parrinder), but nests not found, possibly through lack of search. Dorrien Smith states (*in litt.*) that it now breeds regularly.

(*To be concluded*).

THE LITTLE RINGED PLOVER IN THE LONDON AREA IN 1945

BY

E. O. HÖHN, E. R. PARRINDER AND E. G. PEDLER.

In 1944 the breeding of three pairs of Little Ringed Plovers (*Charadrius dubius curonicus*) was proved in Southern England and a full account was published in *British Birds*, Vol. xxxviii, pp. 102-111. No Little Ringed Plovers were observed at the Tring reservoirs in 1945, but a watch was kept at a number of gravel-pits in the London area and two pairs were found to have bred at gravel-pits in Middlesex, and two adults were seen, but not proved to have bred, at a pit in Hertfordshire. Building operations during the war have caused many of the gravel-pits around London to be enlarged and some new pits to be excavated. Not all the existing or new pits were watched in 1945 and it is possible that a search next spring may reveal further nesting-sites. It should be noted that all three of the pits mentioned below are still being worked; sandy deltas, clear of vegetation, are formed where the sand is washed out of the gravel and it is possible that these feeding areas are a necessary part of the breeding habitat in an otherwise flooded pit.

One, and probably two, birds of the first pair were seen by Höhn on May 8th at the same gravel-pit near Ashford, Middlesex, where a pair reared three young in 1944. No birds had been seen on April 29th, so presumably the arrival at the pit took place between these dates. Two birds were seen on May 12th; as on May 8th, they were on the sandy peninsula which had been the breeding area in the previous year. The birds were not seen on subsequent visits by Höhn in May and early June, but on June 24th Pedler came across two adults and a chick on fields adjoining the gravel-pit. On July 1st Höhn, Parrinder and Pedler saw both adults and at least two, probably three, chicks on one of these fields—a large stony field, almost clear of vegetation, which had been ploughed and rolled flat. At one end of the field is a stony cart track and a perpendicular drop of about eight feet to the water of the pit: on one side was a field of young onions and on the other of dwarf beans. The two adults were last seen together on July 9th. On July 15th only one adult was seen; it behaved as if the young was still about. The last observation at this site was on July 22nd, when one adult was seen. It seems that the young reached the flight stage, although complete proof is lacking.

The second pair was found when a gravel-pit near Shepperton, Middlesex, was visited by Höhn for the first time on July 9th. He found two adults and three chicks: two of the chicks were caught and ringed. The birds were on a sandy peninsula very similar, although smaller, to the peninsula at the Ashford pit where the 1944 brood was seen. While Höhn was looking for the young, one of the adults went into an "injury-feigning" display on the ground

similar to that described by M. D. England (*loc. cit.*, p. 108), but accompanied by a melodious "song"—a trill consisting of rapid repetitions of "trü-trü-trü." The "song" gave the illusion of coming from a bird hovering in the air. This combination of a display component with "injury-feigning" seems to be on a parallel with the display described by J. Staton, of Black-Winged Stilts (*Himantopus h. himantopus*) under similar emotional circumstances (*Brit. Birds*, Vol. xxxviii, p. 328). No birds were seen on August 4th when Höhn again visited the Shepperton pit.

The Hertfordshire occurrence was at a gravel-pit near Radlett. Parrinder visited this pit on June 16th and saw two Little Ringed Plovers (identified by call and absence of white wing-bar in flight) on a sandy spit. Both the "pip-pip-pip-pip" and the "pee-u" notes were heard. The spit itself is unsuitable as a nesting area, but suitable ground exists at this and other pits in the district; the birds were not seen again, however, on six subsequent visits.

Mr. T. Bispham saw a Little Ringed Plover on passage at the Brent Reservoir, Middlesex, on August 18th, and Dr. J. S. Carter saw one at the same place on August 23rd, one, possibly two, on August 24th, and one on August 25th and 27th. What was doubtless the same bird was also seen by Mr. Peter R. Knipe on August 26th.

[It is of interest that a single bird was clearly identified by Mr. R. W. M. Lee on May 22nd in a gravel-pit near Coventry, but it was not seen subsequently. Details are unavoidably held over until our next number.—Eds.]

NOTES ON THE BREEDING OF THE LITTLE GULL

BY

FR. HAVERSCHMIDT, M.B.O.U.

(Plates 1—6)

PERHAPS one of the most interesting ornithological events during the last years in Holland was the discovery of a small colony of Little Gulls (*Larus minutus*) in 1942, being a striking example of extension much to the west of their normal breeding range. Though the birds nested at a distance of about 30 miles from my residence, I paid many visits to them in 1942-1945 and the following notes, fragmentary as they are, may be of value as additions to the Breeding section in *The Handbook of British Birds*, Vol. v.

HABITAT.

The Little Gulls nested in a typical Dutch inland marsh (old peat bogs), where the water was covered with a dense vegetation of *Stratiotes aloides*. A large number of Black Terns (*Chlidonias niger*) nested in this marsh and there was also a colony of Black-headed Gulls (*Larus ridibundus*). The Little Gulls bred in company with the Black Terns, the nests of both species often being only a few metres distant from each other, but not in the immediate neighbourhood of the Black-headed Gulls.

ARRIVAL IN SPRING.

The Little Gulls seemed to arrive early on their breeding place, as on April 23rd, 1943, I observed for a short time two pairs of adult birds. It looked as if the birds were already paired, as they flew about calling, giving the impression that they were already alarmed by the presence of an intruder in their domain. This always happened before actual breeding started. The birds suddenly made their appearance, circled about uttering their alarm note and after a short time disappeared again. This period of unrest and erratic behaviour lasted for about a month. They settled in different parts of the marsh, where they stood preening among the *Stratiotes* plants, only to leave the place suddenly and vanish altogether. It often happened during this period that I was on the spot without seeing a single bird, and then all of a sudden a few of them would be circling around me and uttering their alarm note. Then they would vanish as unexpectedly as they had arrived, without coming back during the whole day. I also could never foretell in which part of the marsh the birds would ultimately build their nests and breed, as they always settled in different parts. In fact in the four seasons I was able to observe them they never nested on the same spot in consecutive years.

Of display and courtship I did not see very much during my visits. On a few occasions only I was able to observe the typical display, consisting of chases of two or more birds in which the pursuing one glided above the other with the head held obliquely upwards. I never saw a ground display, though the birds often settled on the *Stratiotes* plants, where they remained for a considerable time.

Even as late as June 23rd, 1943, at a time when there were only a few nests with eggs left, I observed a group of five adult Little Gulls chasing each other in this aerial display.

NESTS AND EGGS.

In 1942 the nests were discovered on May 27th, but it is certain that there were already full clutches some days before May 23rd, which is rather early. In 1943 and 1944 they were somewhat later, as there must have been full clutches in the last days of May, judging from the fact that I found chicks on June 23rd and 18th respectively.

The nests were always built in those parts of the marsh where the *Stratiotes* vegetation was at its densest. In contrast to the *Handbook* description I found the nests carefully built; they were pretty solid and neat structures of dead reed-stems, old bits of *Equisetum limosum* and pieces of dead *Stratiotes* leaves. Both sexes build and the nests are kept up well during the whole breeding-season. On June 18th, 1944, I found all the nests in a group of five composed largely of stems of grass which had been cut for hay. On that day the grass of the dyke bordering the marsh was cut and it lay drying in the sun. A group of six adult Little Gulls was busily collecting hay-stems on the dyke for nest material. On Plate 4, the hay-stems with the flowers still on them can be distinctly seen.

The Little Gulls never nested in one single colony, but always split up in several small groups or even singly. For instance in 1942 15 pairs were found nesting in groups of 1, 2, 3, 3, and 6 pairs. In 1943 18 pairs bred in groups of 6, 7, 2, 2 and 1 pair. In 1944 15 nests were found (two of them apparently being second layings) in groups of 2, 2, 3, 3 and 5 pairs. In 1945 only a single pair bred. In these small groups the birds nested in most cases at a distance of several metres from each other. In June 1944, however, there were in the group of five pairs, two nests at a distance of only 3 metres from each other.

In my experience, the clutch of the Little Gull consists in most cases of two and three eggs, but quite often of only one egg, which is not mentioned in the literature. Once (June 18th, 1944) I found a beautiful clutch of four eggs (Plate 5), which were so uniform both in colour and in markings that I do not hesitate in attributing them to one female. Clutches of four are, however, mentioned several times in the Finnish literature and Merikallio [7] gives some photographs of nests with four, five and even six eggs, the last ones being of course the product of more than one bird.

The figures I obtained for the size of the clutches during 1942-1945 are the following :

- 1942 : 3 nests : 1/3, 1/2, 1/1.
- 1943 : 10 nests : 4/3, 3/2, 3/1.
- 1944 : 15 nests : 1/4, 4/3, 7/2, 3/1.
- 1945 : 1 nest : 3.

In all, I have examined twenty-nine nests with full clutches, consisting of : one with 4 eggs, ten with 3 eggs, eleven with 2 eggs, seven with 1 egg only.

Eleven eggs which I measured average 40.8 x 29.5 mm ; maximum 43.7 x 29.6 and 41.3 x 30.7 mm.; minimum 39.7 x 29.4 and 39.8 x 28.3 mm.

INCUBATION.

Incubation starts with the first egg, but I have no personal observations on the incubation-period. Tischler [8] states it to be twenty-three days, though he does not mention his authority, and further quotes Schwanitz, who established in three cases an incubation-period of 28 days, which he attributes to a spell of cold weather.

Both sexes incubate and when photographing the birds I watched the changing over on a few occasions. On May 29th, 1942, the sitting bird was gently pushed off the eggs by the arriving bird, and on June 16th, 1945, the relieving bird alighted just behind the sitting one, which at that moment left the eggs. As the relieving bird settled on the eggs, the other came back and alighted beside its sitting mate, which started to call loudly.

YOUNG.

The chicks of the Little Gull resemble a small edition of the Black-headed Gull, though they are distinctly darker (Plate 6.). I can corroborate Bengt Berg [2] who observed that they leave the nest almost immediately as soon as they are dry. They are very active and lively, much more so than Black-headed Gulls. For this reason I found them only a few times, when I was fortunate enough to visit a nest where the eggs had just hatched. I never saw half-grown chicks or even young on the wing. At this time of the year it is almost impossible to penetrate through the thick vegetation and the chicks have plenty of opportunity to hide when one is trying to push a boat to the breeding place.

According to Tischler [8] the fledging-period is 21 days and the chicks which Heinroth [4] reared fluttered when 18 days old and could fly well at the age of 24 days.

BEHAVIOUR.

During the breeding season, the Little Gull is one of the tamest and most confident birds I have ever seen. In the beginning of the season the white birds are very conspicuous when sitting amidst the green *Stratiotes*, and as they sit so tightly the nests are very easily found. Later they are almost completely hidden by the foliage all



LITTLE GULL INCUBATING : Friesland, June 16th, 1945.
(Photographed by Fr. Haverchmidt)

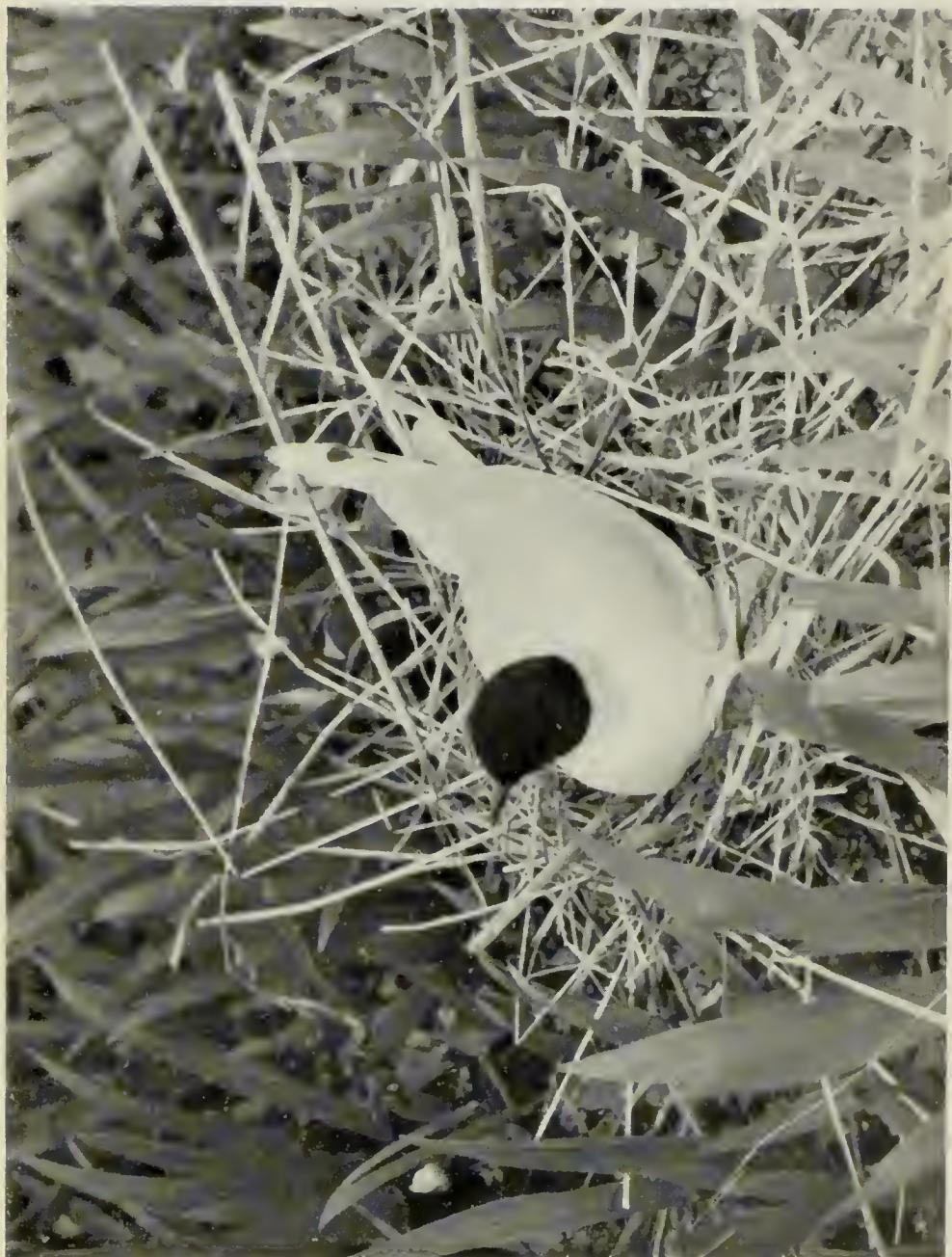


LITTLE GULL ALIGHTING ON NEST : Friesland, June 11th, 1943.

(Photographed by Mr. Haverschmidt).



LITTLE GULL WITH SUB-TERMINAL SPOTS ON PRIMARIES : Friesland, June 11th, 1944.
(Photographed by Fr. Hayverschmidt)



LITTLE GULL WITH SUB-TERMINAL SPOTS ON PRIMARIES : Friesland, June 23rd, 1944.
(Photographed by Fr. Haverschmidt.)



LITTLE GULL's NEST WITH FOUR EGGS : Friesland, June 18th. 1944.

(Photographed by Fr. Haverschmidt).



NESTLING OF LITTLE GULL : Friesland, June 18th, 1944.
(Photographed by Fr. Haverschmidt).

around them. In the middle of the season they are very close sitters and will remain on the eggs long after all the neighbouring Black Terns have left the nest, and they are the first to settle on the eggs again. I never photographed a more confiding bird. In 1943, when I was in a small boat inspecting the nests, one of the Little Gulls alighted on its nest when I was at about 4 metres distance, and when I put up my hiding tent in the boat and placed it $1\frac{1}{2}$ metres from the nest it immediately settled on the eggs again. On June 20th, 1942, I stood without any concealment at a few metres distance of a bird brooding its newly-hatched chicks. Another bird with small young stooped repeatedly at me, though without hitting.

PLUMAGE.

Finally a few words must be said about the plumage of the breeding Little Gulls. In full breeding plumage they are truly magnificent birds. Their velvet black hood, their wonderful white-tipped wings, the slaty underside of which is so beautifully exposed when on the wing or when alighting on the nest (Plate 2), their short vermillion legs and the soft rosy hue of their underside, which is quite distinct when they are close at hand, are really a marvellous sight. There were nearly always present in the colony some birds in first summer plumage with a dark tail-band, brown on the wings and a black hood spotted with white. They did not breed, however, and behaved in exactly the same erratic way as the adult birds before nesting started, appearing suddenly and vanishing as unobtrusively as they arrived. I observed them on the following occasions : May 27th, 1942, 1 ; June 20th, 1942, 1; April 23rd, 1943, 1 ; May 8th, 1943, 1 ; June 2nd, 1943, 1 ; June 11th, 1943, 1 ; May 24th, 1944, 2 ; May 28th, 1944, 8 ; June 1st, 1944, 2 ; June 18th, 1944, 1. On June 2nd, 1943, and May 24th, 1944, one of these birds alighted on the *Stratiotes*, but they had no nests and I did not see them again on that particular spot. Kjaer [6], however, mentions the breeding of a bird in this plumage in Denmark, and Søgaard Andersen [1] watched a pair at a nest with two eggs at Tipperne (Denmark), one of which had white spots in its black hood and the underside of the wings lighter than in adult birds.

Further, I observed in the colony on three occasions (June 20th, 1942, June 23rd, 1943 and May 21st, 1944) a bird which was fully adult but in complete winter plumage, with a white tail, gray wings with white tips and grey head, which seems rather strange at that time of the year ; these birds were not breeding, however. The bird I watched on June 23rd, 1943, was among the party of five which were chasing each other in aerial display (see p. 15), Andersen [1] also observed a bird in winter plumage at Tipperne on June 2nd, 1942, the day before he found a pair breeding.

On the other hand it seems to be a regular and common feature in the Little Gull that birds in adult plumage, but with remnants of the first summer plumage, consisting of subterminal dark spots on

the primaries, breed. Dwight [4] mentions these birds in otherwise full breeding dress, but with dusky shafts and subterminal spots on the ninth to the sixth primaries*; he regards them as somewhat backward in the development of their plumage. Bengt Berg [2] was the first to establish that birds in this plumage actually breed, and he gives some photographs of them. In no less than three of the five pairs he was studying on the island of Öland, one of the pair possessed these dark spots on their primaries. He further remarks that two of these pairs, being apparently younger, started to lay later and had only two eggs.

In 1942 I did not inspect all the breeding birds with reference to their plumage, but in the pair I photographed on May 29th, one of the birds had dark subterminal spots on the second to the fifth (inclusive) primary. The clutch of this pair consisted of three eggs, and I do not know whether they started to lay later than the other birds. In 1943 there were 18 pairs, but I did not notice any birds with remnants of immature plumage, though I must confess that I did not watch them all with regard to this point.

In 1944 I paid special attention to the plumage of all breeding Little Gulls, and in two pairs one of the birds showed these dark spots on the primaries. I photographed both of them on the nest (Plates 3, 4) and the spots on the primaries can be distinctly seen. One of these pairs had only a single egg, the other one three eggs, and I cannot say whether they laid later than the other birds. Both their mates were in full adult plumage.

In 1945 the only nesting pair consisted of two fully adult birds.

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* Third to sixth of the *Handbook* terminology.—EDS.

SOME NOTES ON THE NESTING OF THE GREEN WOODPECKER

BY

N. TRACY.

ON May 7th, 1944, I found the partially excavated hole of a pair of Green Woodpeckers (*Picus viridis pluvius*), situated in a dead silver birch stump about ten feet from the ground and facing E.S.E. I placed a piece of green cloth on the ground beneath the hole and shook the chips off every morning and evening. The last chips were thrown out on May 15th.

At 7 p.m. on May 20th, I opened the hole from the back. There were five eggs in the egg chamber. I fixed a piece of roofing felt over the hole I had made and inspected the hole again at 10 a.m. the following morning. There were still five eggs in the egg chamber, so the clutch was evidently laid up. I had found from previous experience that laying begins the day after excavation is finished.

I visited the nest again on May 31st, and heard one of the woodpeckers calling near the nesting-tree. I did not climb up to the hole. On June 3rd, at 5.45 a.m., I climbed up to the hole and looked in. There were four lusty young birds. They were quite naked and blind and were making a slight noise which could only be heard at the nest level. They were twining their long necks round each other. Judging from their size, and from what I had seen on previous occasions, they had hatched out on June 1st, which would give an incubation period of 12 days.

I am aware that this period is very much shorter than that of 18-19 days quoted by Jourdain in *The Handbook*, and the Editor has suggested that possibly some chips continued to be thrown out after the eggs had been laid and that incubation really started before May 15th. I feel convinced, however, that this could not have been the case. The last time I shook the piece of cloth there were many chips on it and not only a few, and after this no more chips were thrown out. On several previous occasions when I have put a piece of cloth under a nest hole I have found a few chips on it, even after I had opened the hole, but I always considered that these had fallen there from the surrounding foliage. It seems quite possible that woodpeckers may occasionally throw out a few chips after they have started laying, but I cannot believe they would throw out any large quantity after there were eggs in the hole. Every day before May 15th I had shaken a good many chips off the cloth both morning and evening, and when the chips ceased to appear I felt quite sure that excavation was finished.

I have opened up several Green Woodpeckers' nests in the way described and the evidence I have obtained by this means consistently indicates, as I have mentioned above, that laying begins the day after excavation is completed. The first nest I ever opened up, in Hampshire, was opened the day after the last chips were thrown

out, and it contained one egg. In 1937 I opened up another three days after the last chips were thrown out and found three eggs in the hole, and in 1941 I opened up two nests respectively two days and three days after excavation ceased and found two eggs in the first and three in the second.

A further point is that neither on May 20th nor 21st was a bird in the hole, though the Green Woodpecker is a very tight sitter once incubation has begun. I have watched a good many nesting-holes of all three British species and I have never known a Green Woodpecker to leave the hole when incubation has properly started unless it is relieved by its mate, which takes place about every three hours.

In view of the considerations mentioned I am convinced that 12 days was the correct figure in this case. It seems possible that the longer periods have been over-estimated, though I do not suggest that this is necessarily so, as we do not know how much human interference or other disturbing factors might prolong incubation.

The further history of this nest is transcribed from my diaries.

June 4th, 9.45 a.m.—Young still naked and blind and appeared very sleepy.

June 8th, 6.45 p.m.—One of the parent birds flew out as I approached the hole. The young were still naked and blind, but about twice the size that they were on the 3rd. No trace of down, but a decided bluish colour showed under the skin on the outside of the thighs and on the outside of the last joints of the wings.

June 11th, 9.30 a.m.—Eyes just opening. Dark area each side of crown. Down on thighs and lower joint of wings. Young audible several yards from stump.

June 15th, 6.45 p.m.—Young very quiet until I opened hole at back of nest; they then became very noisy. They had grown considerably. The primaries had begun to show and were about a quarter of an inch long. The rest of the wings, except just at the wrists, which were bare, were covered with short down, as were the backs and legs. The dark belts on the crowns had grown darker and broader, but there was no down yet. The naked strip between the two belts still existed. The lumps at the corners of the gapes were plainly visible.

June 17th, 5.20 p.m.—Crowns covered with greyish down except for naked strip down the centre. Wings well feathered except for elbows and wrists. Greyish down on upper part of back, lower part of back and belly still apparently naked.

June 20th.—Reddish patch of feathers on forehead. Two reddish patches on crown, one each side of naked strip, which is gradually filling up with light grey down. Upper and lower mandibles black with light tips. Greenish feathers all over back with light patches between them. Breast covered with greenish down. Wings covered with green feathers. Belly not visible.

June 22nd, 5 p.m.—Nearly the whole of the crown and forehead red, only very small piece of naked strip left near front of crown. Chin covered with light grey down. Breast covered with light green down ; slight trace of green feathers forming underneath the down. Wings covered with green feathers with light patches in between.

June 23rd, 7 p.m.—One of the young shows definite signs of red on the moustachial stripes, two have no moustachial stripe at all, and the fourth could not be seen properly, as it had its back towards me. Naked strip between the two red patches on the crown has filled up with down.

June 24th, 7 p.m.—No change noticed.

June 26th, 7.15 a.m.—Young very noisy and restless. One of the young made a noise which I had previously heard young Green Woodpeckers make when they are ready to leave the hole. I still could not get a view of the front of the young bird which on every occasion had its back towards me.

June 27th, 7 a.m.—Young very noisy and restless. 8.15 p.m.—Young quieter than in the morning.

June 28th, 7 a.m.—Young very noisy. No apparent change has taken place in the plumage. 8 p.m.—For the first time I saw the front of the bird which previously had always its back turned towards me. It had the moustachial stripes well defined with red spots on them. The red spots on both birds were well developed. The other two showed no signs at all of moustachial stripes, and must be females. The fleshy lumps at corner of gape have nearly disappeared.

June 29th, 7 a.m.—Young appeared much bigger and stronger and were climbing up the walls of the nesting chamber. The young left later on in the day. Fledging period, 28 days. This agrees with another nest which I watched a few years ago.

The dimensions of the nest hole were as follows : diameter of entrance, $2\frac{1}{2}$ ins.; depth from roof to floor, 1 ft. $9\frac{1}{2}$ ins.; diameter half way down hole, $7\frac{1}{2}$ ins. The bottom of the nesting chamber was in a very foul state and contained about 2 inches of very moist excreta. This I removed and replaced the roofing felt in the hope that the birds would use the same hole again in the following season.

As I did not wish unduly to disturb the birds I spent as little time as possible near the nesting hole, and at each visit spent only about five minutes examining the young birds. I only once put one of the old birds off the nest and that left when I was several yards off. On the other occasions I always managed to approach the nest when the old birds were away. I was afraid that if I kept them away too much it might unduly prolong the incubation and fledging period. I believe that the fledging period of the Great and Lesser Spotted Woodpeckers (*Dryobates major* and *minor*) is approximately the same as that of the Green Woodpecker. I have two records of the Lesser Spotted Woodpecker's fledging period and each of these was twenty-eight days. I watched a Great Spotted Woodpecker's

nesting hole in 1944. It was inaccessible, but I watched it very carefully and found that 45 days elapsed between the time the last chip was thrown out and the time the young left the nest. This would suggest 5 days for laying, 12 for incubation, and 28 for fledging, though there is no positive proof of this. I should add that I am not now satisfied that fledging-periods of 17(?) and 21 days, which I quoted in Vol. xxvii, p. 125, were estimated correctly.

For the above-mentioned reason I spent very little time watching the nest from the ground, and the little I did was during the fledging period. I have found from previous experience that during daylight the old birds share the incubation equally, doing three hour shifts, which never seem to vary more than a minute or two; this of course is when they are not frightened by a hide being near the nest. The male always appears to do the incubation at night.

The old birds also share the feeding of the young, visiting the nest about every hour, and generally coming to feed at nearly the same time. Before going into the nest they stay outside a few minutes and can be seen regurgitating the food into their throats.

When the young are old enough to put their heads out of the entrance hole, the old birds appear to have three different ways of feeding them. The commonest is for the young birds to open their beaks quite wide and for the old birds to push their beaks right down the young one's throats. The next method is for the old bird and the young bird to put their heads on one side and to put their beaks together so as to form a four-walled passage. In this case the old bird must push the food down with its tongue. The third and rarest method is for the young bird to open its mandibles wide and for the old bird to put its mandibles between them and at right angles to them. When this is done the food can be actually seen as a dark grey substance of the consistency of very thick porridge and the old bird can be seen pushing the food down with its tongue.

[Mr. Tracy's observations on incubation- and fledging-periods certainly suggest that these need further study in the woodpeckers. His evidence for 12 days incubation in the case of the Green Woodpecker is certainly very strong, though it seems extraordinarily short for a bird of this size. It may be noticed that the German *Handbuch der deutschen Vogelkunde*, on the authority of Dr. M. Schlott, gives a somewhat shorter period than Jourdain, namely 15-17 days. On the other hand the well-authenticated fledging-period of 28 days is unexpectedly long: Jourdain gives 18-21 days and Schlott 19. Again, Mr. Tracy's fledging-period of 28 days for the Lesser Spotted Woodpecker and his suggestion that that of the Great Spotted Woodpecker is similar contrast with the figures of 21 and 18-21 respectively in *The Handbook* and with the Continental figures for the latter species of 21-23 days (Steinfatt, 1937) and 22-25 days (Comte, 1933). These figures appear to indicate variations of as much as a week in the fledging-periods of all three species.—B.W.T.]

NOTES.

COURTSHIP DISPLAY OF CHAFFINCH.

THE following notes on the display of the Chaffinch (*Fringilla cœlebs gengleri*) are incomplete, but the display indicated is similar to that described by Dr. C. J. F. Coombs (*antea*, Vol. xxxviii, p.154).

On April 18th, 1945, at Gumley, Market Harborough, Leicestershire, at about 6 p.m. (B.S.T.), a female was seen to fly on to the branch of a tree followed by a male which settled on another branch nearby. The male was calling a thin shrill "si-si-si" and commenced to make little jumps about the branches, with wing "shoulders" raised (but rest of wing kept close to sides), exposing his greenish rump. He then sidled to the left in a series of small hops, then on to another branch nearby, and jumped up and down in a curious manner. Then he flew and sang from the next tree, and the female called a loud "pink-pink." Ten minutes later another pair about 200 yards away was observed. A male was standing on the top of an upright barrel. A female flew up and perched on the edge, facing the male and the high pitched "si-si-si--" was heard; the male immediately commenced to jump up and down (half an inch or so high) like a toy. Being viewed squarely from the side it is not certain whether he made any sideways movement. All this time he had shoulders "hunched" and head slightly depressed with rump exposed. He stopped when the female flew off. On April 19th, 1945, this second male was again heard making its shrill note and was seen hovering erratically with fluttering wings, while a sound as of rattling on wood was heard, but how this was produced could not be ascertained. No female was seen this time, but could well have been present, as this display took place in part of a dense hedge.

G. BEVEN.

[The rattling sound mentioned, which I have called a "gurgling rattle" in *The Handbook*, is a very usual accompaniment of sexual behaviour in the male.—B.W.T.]

UNUSUAL FORMS OF CHAFFINCH SONG.

ON May 27th, 1945, at 9.11 a.m., G.M.T., a cock Chaffinch (*Fringilla cœlebs gengleri*) sang a song which opened with a hurrying babble or warble, so like the song of a Hedge-Sparrow (*Prunella modularis occidentalis*) that it was necessary to watch the singing bird through binoculars to be sure of the mimicry. The babbling passed into a normal flourish—the "cherry-erry-erry tissi cheweo" of Garstang—at the close of each phrase. After half a dozen repetitions of the mimetic song, the warble was gradually changed over into the usual opening passage—the "chip chip chip tell tell tell"—until the Chaffinch had returned to a wholly "normal" song. At 9.15 the bird sang the "Hedge-Sparrow" song several times and then reverted abruptly to "normal" song.

At 9.20 the same cock Chaffinch sang a new variation from another perch. The opening passage of each phrase was a loud but excellent

imitation of the stressed notes at the beginning of the song of a Goldcrest (*Regulus r. anglorum*) followed by a normal Chaffinch flourish. This type of song was also repeated several times.

This observation was made near St. Just-in-Penwith, Cornwall. Both Hedge-Sparrows and Goldcrests were singing at the same time as the Chaffinch and within fifty yards of its perch. The place was visited several times in the following days, but no more abnormal song was heard.

P. H. T. HARTLEY.

WHILE cycling along the by-pass near Boreham Wood, Hertfordshire, on May 30th, 1945, I checked to listen to the song of a Lesser Whitethroat (*Sylvia c. curruca*). Suddenly a male Chaffinch (*Fringilla cælebs gengleri*) chased a House-Sparrow from a small tree at the spot, and after both alighted on a five-barred gate, the former bird sang—an exact repetition of the Lesser Whitethroat, song I had heard immediately before. The Chaffinch then flew across the road, and passed quite close to me as it returned, to perch on a dead tree near the gate. Here I watched it through glasses while it continually uttered the "Lesser Whitethroat" song, each time prefixed by two thin and very high-pitched piping notes. As I cycled away I heard it sing the normal Chaffinch song once only.

This apparently abnormal song variant appears particularly noteworthy in view of Mr. England's description of the song of a female Chaffinch as being "very similar to that of a Lesser Whitethroat" (*antea*, Vol. xxxviii, p. 274). It should be stressed, however, that whereas other observers have described the songs of females as not unlike a poor version of the normal male song without the terminal flourish, this comparison would have been quite inapplicable in the present case, the resemblance to the song of a Lesser-Whitethroat being in fact so exact, apart from the preliminary thin notes, that had I not been looking at the bird through glasses I should actually have attributed it to a Lesser Whitethroat without hesitation.

F. C. BROMLEY.

DISPLAY OF WILLOW-WARBLER.

A cock Willow-Warbler (*Phylloscopus t. trochilus*) usually frequents my orchard at Cumdivock, Cumberland each spring: generally a hen arrives later and the pair breed in the orchard or on the roadside grass-verge outside. Occasionally no hen arrives, in which case the cock deserts after a residence of two or three weeks, during which period he sings continuously. When a hen has arrived the display of the cock has been seen on a number of occasions prior to incubation. Before the arrival of a hen the cock, during the intervals between singing, will slowly raise both wings up and down several times. When the hen arrives the cock continues his wing-raising, often with tail slightly depressed and also glides through the air with vertical wings. The hen replies with a similar wing-raising exhibition and the cock may stretch

out his head and neck, at the same time moving the head in a sideways manner. The wing-raising of the hen seems to be a sign that she is willing to accept coition and this action frequently follows. A cock was singing in an apple-tree when the hen flew through the air with rather slow-motion flight and alighted on a branch in a neighbouring apple-tree, where she raised her wings half-vertically several times after the manner of a Hedge-Sparrow (*Prunella m. occidentalis*) : the cock at once flew to her and copulated. On several occasions coition has been noticed to follow on this wing-raising by the hen, the cock often uttering a harsh rasping note prior to copulation. Two outstanding displays have been seen by a cock without coition occurring. On May 25th, 1942, a cock displayed three times to a hen, both birds perched on a tree-branch a few inches apart. The hen was in a normal attitude, the cock perched upright, head stretched out, wings bent stiffly downwards from the carpal joints, tail depressed and slightly fanspread, whilst a harsh grating note was uttered during the display. The hen appeared indifferent and twice the cock, after displaying, flew to a neighbouring tree, where he sang a low sub-song for several seconds before returning to the side of the hen to display again. On June 10th, 1926, a cock displayed to a hen, both on the same branch and a few inches apart. The hen was in a normal attitude, the cock perched upright, with head and neck outstretched and slightly bent down, tail depressed, wings bent downwards from the carpal joints, and these were slowly moved in a sideways direction whilst the bird uttered a loud hissing note.

R. H. BROWN.

COURTSHIP-FEEDING AND DISPLAY FLIGHT OF OF WILLOW-WARBLER.

As courtship-feeding of the Willow-Warbler (*Phylloscopus t. trochilus*) is not recorded in *The Handbook*, the following may be worthy of note.

On May 10th, 1942, I was watching a Willow-Warbler building its nest. The female (no song and grass in bill) was perched on a branch about 2 feet from the ground when the cock flew down to her and fed her. Later I saw "injury-feigning" at the same nest when it contained young.

On April 30th, 1943, I witnessed a peculiar display-flight of a male Willow-Warbler. The bird, which was perched on the branch of a birch, uttered a slightly harsh, but plaintive "cheep" with wings spread. It then flew horizontally to an adjacent branch with a moth-like flight, in which the wings were moved slowly and not brought below the horizontal position, flicked its wings, moving about restlessly, and then commenced to sing. There was no other Willow-Warbler in evidence.

R. H. DUNT.

MARSH-WARBLERS IN HEREFORDSHIRE.

THE breeding of the Marsh-Warbler (*Acrocephalus palustris*) in Herefordshire in 1938 is recorded in *The Handbook*. Since then

several pairs have bred annually in one locality at least. In 1945 four pairs probably bred. In the case of one nest which was watched, the first egg was laid on June 12th, further eggs were laid at the rate of one a day till the clutch of five was completed, and incubation took 13 days. The young left the nest 10 days later.

L. SMITH.

YOUNG SEDGE-WARBLERS RETURNING TO NEST.

ON July 26th, 1945, I found the nest of a Sedge-Warbler (*Acrocephalus schænobænus*), containing four young, apparently about 8 or 10 days old. As I approached, three of them flew out into the reeds, leaving one in the nest, which I ringed. Although I made a search of the surroundings I failed to find the three which had flown. I returned the next day intending to examine the nest when I found that two of the nestlings had returned and were sound asleep in the nest.

The ringed one was not there. The nest was suspended in reeds and about two feet from the ground. This seems to me to be rather an unusual occurrence.

D. R. ANDERSON.

[We have never personally found any evidence of warblers returning to the nest after once leaving it and believe the behaviour described to be quite unusual, though we have never given special attention to the point. Possibly other readers can contribute relevant observations.—Eds.]

MALE BLACKBIRD ATTEMPTING TO FEED FEMALE.

ON May 15th, 1945, in my garden at Englefield Green, Surrey, I was watching a male Blackbird (*Turdus m. merula*) pecking a large piece of bread. Suddenly a female flew down—I am quite sure it was a female and not a young bird, for it had sleek plumage and full tail. As soon as she arrived she crouched down, head and neck vertical with the beak wide open, and wings fluttering. The male then made several clumsy attempts to feed her with the bread, but failed to do so. The female then flew at the male and having driven him off, started to feed. The attitude of the female was evidently similar to the coitional posture described by O. Antonius, quoted in *The Handbook*, but the behaviour of the pair on this occasion seemed to resemble courtship feeding.

A. MANNING.

GREAT SPOTTED WOODPECKER BREEDING IN CLACKMANNAN.

IN *The Handbook of British Birds*, it is stated that the Great Spotted Woodpecker (*Dryobates major anglicus*) does not nest in the county of Clackmannan. There was a nest in 1945 on the Brucefield Estate (Lord Balfour of Burleigh), which is inside the county boundary, and enquiries reveal that the species has bred on the estate for many years. The nest was found by one of us (W.B.) on May 19th, and was situated in a dead branch of a silver birch 13 feet from the ground.

An interesting point about this nest is that it contained newly hatched young on May 27th, which means that the first egg must have been laid about May 5th, which seems very early according to *The Handbook*. Some photographs of the birds were taken on May 27th. There were five or six chicks, which were seen with the aid of a strip of mirror and a torch. Two egg-shells, from which chicks had been hatched, were on the ground directly under the nesting hole.

It may be mentioned that in the district of Dunfermline, S.W. Fife, Great Spotted Woodpeckers have also been noted on the Inzievar estate (two pairs), at Saline (one pair) and at Craigluscan (one pair).

W. BEATON AND J. ERIC WHEATER.

MARSH-HARRIERS IN SUFFOLK, SUSSEX, AND YORKSHIRE.

DURING June and July, 1945, I watched almost daily a male Marsh-Harrier (*Circus æ. aeruginosus*) quartering a marsh at Dunwich, Suffolk. Only twice out of twenty occasions on which I watched him, did I see his presence actively challenged and both times by Lapwings; this despite the fact that the marsh is well populated by Redshank and other marsh-breeding birds.

In August he was joined by the female, and on August 31st, I watched them share a meal with five Carrion Crows. This was a perfectly friendly affair, no jostling for position and neither appeared to resent the company of the other. PETER PARDOE.

On August 25th, 1945, I was travelling on the upper deck of a 'bus between Seaford and Eastbourne. As we were slowly descending the hill into the Cuckmere Valley, I saw a large hawk flying low over a stubble-field adjoining the road. By its long wings and tail I at once knew it to be a harrier. The 'bus passed the bird at a distance of between 30 and 40 yards and I was able to obtain an excellent view. It was about the size of a Buzzard. There was no white or grey on the rump and the whole back was a dark brown colour with the exception of very marked buff patches and streaks on and around the shoulders. Unfortunately I was unable to see the head, but I have no doubt that the bird was a Marsh-Harrier (*Circus æ. aeruginosus*). D. D. HARBER.

On September 9th, 1945, on the invitation of Mr. C. Proctor, a visit was made to Hornsea Mere. This followed a report from the keeper, Mr. Childs, of the presence there of a large hawk.

After some time the bird was flushed from trees and bushes at the edge of the reed-beds. The bird was a harrier, showing a uniform dark brown back and tail. From the colouring and size, which was appreciably larger than a Carrion Crow (*Corvus c. corone*), it was identified as a Marsh-Harrier (*Circus æ. aeruginosus*).

On September 16th, a further visit was made, and the bird again seen and watched through 12 x 32 glasses for a considerable time, in a good light, at about 200 yards. The head showed a distinct yellow cap; otherwise the colouring was dark brown. After some

time it was joined by a second bird of the same size and colouring, except that the tail of the second bird was a light buff. The two harriers spent some time soaring over and round the trees bordering the Mere, and occasionally swept low over the reed-beds. On two occasions one bird dropped into the reeds. At one time they were persistently attacked by a Merlin (*Falco columbarius æsalon*). The keeper stated that one bird had been present from about August 20th and the two were first seen together on September 14th.

J. LORD AND G. H. AINSWORTH.

FIRST BREEDING OF FULMAR PETREL IN NORTH WALES.

A FULMAR (*Fulmarus g. glacialis*) laid an egg on the Great Orme's Head, Caernarvonshire, in 1945. This is the first time one has been proved to breed in North Wales.

The history of the Fulmar's prospecting of North Wales cliffs in the breeding season is as follows:—

GREAT ORME'S HEAD, CAERNARVONSHIRE.—R. W. Jones (*antea*, Vol. xxxiii, p. 164), saw two birds gliding to and fro right up against the cliffs on April 17th, 1937, one on May 28th, 1937, one on April 20th, 1938, and one on April 22nd, 1939.

P. J. Dyne tells us that he saw odd birds in 1941, but Fisher saw none on several days in August, 1941.

In 1942, Dyne saw one on April 19th, two or more on May 2nd and 3rd, none on May 9th and 26th. On May 31st, two or three were seen flying round a part of the cliff; one flew up to a height of about 350 feet and appeared about to land when it sheered off. Sumerfield saw one bird on June 14th. Dyne saw the birds last in July.

In May, 1943, W. B. Alexander saw none, but Sumerfield had seen one on April 25th and 26th. Dyne, who was in the neighbourhood for most of the year, saw none.

In 1944, Sumerfield saw one on April 9th and 11th and June 18th and 25th, but none on August 26th.

In 1945, Sumerfield saw one on April 3rd. Dallas saw three birds on a ledge on May 8th, one in flight on May 12th, one on the ledge on May 22nd. Newton saw a pair on May 24th; on May 28th he was able to induce a Fulmar to lift itself for a moment and disclose an egg, at the ledge previously noted by Dallas; there was apparently only one pair present. On June 21st and 23rd, Dallas found this bird sitting tight; on July 14th, it was still sitting and the egg was clearly seen. It was still sitting on July 19th, but both bird and egg had gone on July 28th.

LITTLE ORME'S HEAD, CAERNARVONSHIRE.—At these cliffs Sumerfield saw single birds "prospecting" on June 14th, 1942, and April 25th, 1943, and Dallas one on May 12th and 28th, 1945.

ST. TUDWAL'S ISLANDS, CAERNARVONSHIRE.—Fisher saw no signs of Fulmars here in August, 1935, but, as I. B. Smith informs us, "one of the local fishermen, in Abersoch, said he had seen a Fulmar near the islands on two occasions in 1943."

LLEYN PENINSULA, CAERNARVONSHIRE.—I. B. Smith explored the cliffs of the Lleyn Peninsula very thoroughly, from Trevor round to Abersoch, between July 15th and 28th, 1944, and found no signs of Fulmars.

SOUTH STACK, HOLYHEAD, ANGLESEY.—W. B. Alexander informs us that Fulmars have been present at the South Stack, Holyhead, since 1938. In June, 1939, birds were seen at intervals along the cliffs for a distance of nearly a mile. In 1940, Dr. G. Carmichael Low saw two birds sitting on sites on the south face of the South Stack, on June 3rd, but there was no sign that they were breeding. In May or June, 1943, B. Thomas saw birds here, but on August 9th, 1945, G. E. S. Turner saw none at the South Stack, though he was not able to explore all the neighbouring coast.

JAMES FISHER, R. G. NEWTON,
A. R. SUMERFIELD AND J. E. S. DALLAS.

WING-CLAPPING OF TURTLE-DOVE.

In the evening of June 11th, 1945, while I was watching birds at Bransford, near Worcester, a Turtle-Dove (*Streptopelia t. turtur*) alighted in an ash some 70 yards away and began to sing. About a quarter of an hour later my attention was attracted by this bird clapping its wings as it passed overhead in a display-flight.

As it is stated in *The Handbook* that wing-clapping during the display-flight "needs confirmation," and by Colquhoun (*antea*, Vol. xxxiii, p. 222) that "it is certainly rare and seldom audible," the following many be of interest.

During the remainder of June I witnessed fourteen other display flights of the Turtle-Dove at reasonably close quarters. In nine cases, clapping was heard; in two other cases the wings of the bird were seen beating vigorously, but clapping was not heard owing to the distance (c.130 and c.150 yards, respectively). On two of the other three occasions when no clapping was heard, the bird was performing a second time in the same flight; in such circumstances the climb is apt to be shorter also. On the other occasion when no sound was heard, the bird was about 60 yards away.

On one occasion wing-clapping was just audible at a distance of approximately 130 yards to the windward. In still air the range would seem to be somewhere about 100 yards. The clapping is therefore far less loud than that of the Wood-Pigeon (*Columba p. palumbus*).

Viewed from behind it is seen that the arc traversed by the bird's wings is increased tremendously towards the top of the climb, and it is during this vigorous beating that claps appear to be produced. The number of claps varies considerably; one bird clapped for most of a climb; another gave two claps only. More usually the displaying bird gave several claps towards the top of the climb.

Towards the end of June I found that it was possible to induce a singing Turtle-Dove to display, merely by walking cautiously to

within about 60 yards. I could detect no difference between this and a spontaneous display.

I have also noted Turtle-Doves clapping their wings on rising and immediately before alighting. As in the case of the display-flight, it is only audible at close range. JOHN TOOBY.

[I can confirm that wing-clapping is sometimes heard when the bird rises from the ground.—B.W.T.]

TURTLE-DOVE IN ORKNEY IN SUMMER.

ON June 15th, 1945, in a small wood in the grounds of Balfour Castle, Shapinsay, Orkney, I had a good view of a Turtle-Dove, which flew out of a bush and down a drive. I searched for a nest, but could not see one. G. H. E. YOUNG.

[As noted in *The Handbook*, Turtle-Doves occasionally make a prolonged stay in summer in the Scottish islands, though they have never been known to breed.—EDS.]

BLACK-TAILED GODWITS IN LONDON.

ON August 19th, 1945, we saw four Black-tailed Godwits (*Limosa l. limosa*), one still in summer plumage, feeding on No. 3 reservoir, Lonsdale Road, Barnes. The reservoir is very nearly empty at the moment and there is a very attractive stretch of mud at the bottom, and it was on this that the birds were feeding. This, as far as one knows, is the first record of this species for the Barnes reservoirs. G. CARMICHAEL LOW AND R. PRESTON DONALDSON.

TURNSTONES USING ELEVATED PERCHES.

IN the Field Characters section on the Turnstone (*Arenaria i. interpres*) in *The Handbook*, it is mentioned that the habit of perching in rows on ropes or stakes must be rare in Europe. It may be of interest to note that on August 1st, 1945, I saw a party of forty Turnstones perching on a short isolated section of tubular metal beach defences on East Head, Chichester Harbour. The structure was about 50 feet long and 10-15 feet high, with a middle and upper crossbar. It was set at right-angles to the beach. Most of the birds were on the middle bar, and they were making a loud "tittering" as parties continually changed places. The following day I saw them again in the same place, where, presumably, they were waiting for the fall of the tide. The party had now increased to about sixty, and there was a line of birds on both upper and middle bar. B. A. RICHARDS.

[Though the behaviour described is evidently regular in the locality referred to, it is certainly our experience that it is quite unusual in this country, though the lack of suitable perches in so many Turnstone haunts may in part account for this. Mr. M. D. England informs us that a Turnstone which he saw at the Wilstone Reservoir, Tring, on April 22nd, 1945, perched on the gunwale of a boat and afterwards on a low fence of planks. EDs.]

REDSHANKS REARING TWO BROODS.

A PAIR of Redshanks (*Tringa totanus britannica*) nested at the Otter estuary, Devon, in the spring of 1945. Mr. F. C. Butters, Hon. Secretary of the Devon Bird-Watching and Preservation Society, informs me that the Society has no nesting record hitherto from that locality.

After a brood of three young ones was reared the same pair nested for a second time. At least two chicks of this second brood, partly feathered with some down showing, were present on July 17th.

One parent was not observed after July 5th, and the three juveniles of the first brood were not heard or seen by me after July 6th. I think they must have left the Otter estuary about that date, the other parent staying with the second brood.

Redshanks are stated to be single-brooded in *The Handbook* (Vol. iv, p. 326). W. L. COLYER.

COMMON TERN, LESSER BLACK-BACKED GULL AND GARGANEY BREEDING IN NOTTINGHAMSHIRE.

THE presence of Common Terns (*Sterna h. hirundo*) on the Nottingham Sewage Farm in the summer and their actions and displays have, for the past three years, led observers to suspect that they were breeding in the vicinity. Evidence has now been obtained to corroborate this suspicion.

The breeding area was discovered on July 6th, 1945. It was a large area of ploughed, but uncultivated, land situated between two areas of flooded "tanks" about three quarters of a mile from the River Trent. Vegetation consisted, at that time, of young *Persearia* plants about two inches in height; there were, however, many small patches of bare soil. Later in the season the vegetation had grown to a height of 18 inches.

In this area, on July 10th, six pairs of terns were seen, but the total number of breeding pairs was probably eight. A young bird estimated to be about one week old was found and watched while it was being fed on small fish, probably Gudgeon, by an adult. At the same time another bird was bringing fish to a spot where there was almost certainly another young bird. On July 12th, Mr. P. W. Brown and I watched a bird alight on the ground and, on going to the spot, we found a nest containing two well incubated eggs.

A very young, fledged bird was seen on July 19th; two juveniles able to fly well and another two apparently on their first flight on July 22nd; four juveniles flying well on July 24th, and two unable to fly and another two just attempting to fly on July 28th. From the above information it would seem that at least five pairs were successful in rearing the young.

There is no record of an inland ternery, in England, mentioned in *The Handbook of British Birds*.

I am indebted to Mr. B. K. Montgomery, Mr. T. W. Raines and Mr. J. Staton for confirmatory evidence towards this report.

Four pairs of Lesser Black-backed Gulls (*Larus fuscus grællsii*), were present on the Sewage Farm throughout the summer 1945. A broken egg, most probably of this species, was found on the farm in June, and I was told by one of the workers on the farm, that his son had taken two clutches of their eggs in that month. I was later allowed to see and verify the identity of these eggs and was further informed that a pair had successfully reared a young one some years ago. This species has not previously been recorded to breed in the county.

Three pairs of Garganey (*Anas querquedula*) were constantly seen on the farms in the spring and summer 1945, and on June 9th, a brood of six young was seen; both parents were in attendance. A duck and four young, able to fly well, were about in July.

This species is recorded to have bred once previously in the county in Whitaker's *Birds of Nottinghamshire*. R. J. RAINES.

THE COLD SPELL IN JANUARY, 1945.—In Vol. xxxviii, p. 199, we asked for observations on the effects of the cold spell in January, 1945, which, "though not remarkably prolonged, appears to have had a substantial effect on some birds." We have received a fair amount of information on the subject, but so very incomplete and so deficient in data from large areas of country that it is difficult to draw up a satisfactory report. We think that editors of local Reports must have received, or will shortly receive, a good deal more information than has reached us, and we would urge them to be so good as to pass on to us any relevant data that may reach them, preferably in the form of a general summary for their area. Individual readers in possession of observations which they have not so far sent us are particularly urged to do so. We may recall that any effects noticeable in the subsequent breeding-season are of importance, as well as those observable at the time, and that negative information, i.e., that birds, or certain birds, were not noticeably affected, is as important as positive.

VARIANT *Motacilla flava* IN SUSSEX.—Mr. E. C. Arnold informs us that on May 2nd, 1945, he saw a pair of "Yellow" Wagtails of the variant form resembling the Siberian race or Sykes's Wagtail (*M. flava beema*), discussed in *Brit. Birds*, Vol. xxix, p. 200 and in the Supplementary Additions and Corrections to *The Handbook*, Vol. v, pp. 288-9, on Cooden Golf Links, Sussex. They were seen again at a later date, so probably nested.

JUVENILE REDWING IN KENT IN JULY.—A juvenile Redwing (*Turdus m. musicus*) picked up dead at Kingsdown, near Deal, Kent, on July 27th, 1945, was forwarded to Messrs. Witherby's office by Mr. Rowland B. Codd. The bird was too decomposed to be forwarded to us, but Miss E. P. Leach kindly examined it and confirmed that it was a juvenile of this species. The date seems remarkably early for a bird of the year to reach this country. The finder suggests that it may have been struck by an aircraft over Northern Europe, lodged on some part of the plane and dropped off in Kent, which we suppose is possible, but seems unlikely.

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BRITISH BIRDS

WITH WHICH WAS INCORPORATED IN JANUARY, 1917, "THE ZOOLOGIST."

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BERNARD W. TUCKER, M.A., F.Z.S., M.B.O.U.

ASSISTED BY

NORMAN F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

AND A. W. BOYD, M.C., M.A., F.Z.S., M.B.O.U.

CONTENTS OF NUMBER 2, VOL. XXXIX, FEBRUARY 1, 1946.

PAGE.

A Survey of the Status of Birds breeding in Cornwall and Scilly since 1906. By Lt.-Col. B. H. Ryves and Miss H. M. Quick (<i>concluded</i>) ...	34
The Song of the White Wagtail in winter quarters. By Major P. H. T. Hartley ...	44
Studies of some species rarely photographed. I. The Rough-legged Buzzard. Photographed by H. N. Southern ...	48
Some Criticisms on the recording of Incubation-Periods of Birds. By Lt.-Col. B. H. Ryves ...	49
Notes :—	
Birds on Rockall, 1945 (Flt./Lt. Robert A. Hinde) ...	52
Gatherings of Ravens in Breconshire (Capt. H. A. Gilbert) ...	52
Increase of Siskins in Dumfriesshire (Rev. J. M. McWilliam) ...	53
Gait of Corn-Bunting (W. B. Alexander) ...	53
Large clutches of Sky-Lark, Meadow-Pipit and Yellow Bunting (R. H. Brown) ...	53
House-Martins driving off House-Sparrow from their nest (S. J. Teideman) ...	54
Emigration of Swifts during July (Dr. N. H. Joy) ...	54
Great Shearwaters in the English Channel (H. G. Alexander) ...	55
Earliest known British occurrence of North Atlantic Shearwater (W. E. Glegg) ...	56
Wood-Sandpiper feeding on open shore (T. Bispham and R. H. Ryall) ...	57
Wood-Sandpiper in Westmorland (M. G. Robinson) ...	57
Little Ringed Plover in Warwickshire (R. W. M. Lee) ...	57
Share of sexes in incubation in Kentish Plover (Fr. Haverschmidt) ...	58
Flocking of Golden Plover (R. H. Brown) ...	58
"Injury-feigning" of Oyster-catcher (Fr. Haverschmidt, Norman F. Ellison and Tom L. Johnston, R. H. Brown) ...	59
Behaviour of Little Gull (T. Bispham) ...	61
Common Gulls nesting on birch trees (Capt. Ian D. Pennie) ...	61
Great Skua off Kent and Essex (T. Bispham, R. H. Ryall and W. A. Wright) ...	61

Short Notes :—

Early nesting in 1945. Finches and other Passerines hovering.
Early Fieldfares. Drumming of Great Spotted Woodpecker in October. Hawfinch as prey of Sparrow-Hawk. Ospreys on Loch Ness. Mute Swan nesting in March ...

62

A SURVEY OF THE STATUS OF BIRDS BREEDING IN CORNWALL AND SCILLY SINCE 1906

BY

LT.-COLONEL B. H. RYVES AND MISS H. M. QUICK.

(Concluded from page 11).

KINGFISHER (*Alcedo atthis ispidu*s).

No change ; breeds on suitable rivers throughout the county, but rare in the Land's End peninsula. Regular along Tamar, Bude canal and river, Allen valley, and one or two other streams.

GREEN WOODPECKER (*Picus viridis pluvius*).

No change ; generally distributed throughout the county in fair numbers. By far the commonest woodpecker.

BRITISH GREAT SPOTTED WOODPECKER (*Dryobates major anglicus*).

Definite small increase and spread to the west. Now breeds thinly throughout the county, including the Land's End peninsula, but common nowhere. Largest distribution is probably in the N.E. of the county.

BRITISH LESSER SPOTTED WOODPECKER (*Dryobates minor comminutus*).

No change, maintains its status in small numbers, but uncommon, as it always has been. Not recorded in Land's End or Callington areas. Most suitable habitat is in mid-Cornwall (in the more sheltered valleys, where a few pairs breed annually).

CUCKOO (*Cuculus c. canorus*).

Definite decrease, notably in the Land's End area, but still fairly common on coast and uplands.

Scilly : No change, common.

LITTLE OWL (*Athene noctua vidalii*).

In 1906 a rare occasional straggler (Clark). In 1919 it first appeared near Wadebridge as a resident (Willcocks, *in litt.*), and in 1923 a brood was first noted in the Land's End peninsula (Harvey). Great increase since and now fairly well distributed, even common in some localities (Par and Wadebridge), but recent decrease in others (N.E. Cornwall, Callington, Tintagel and Mawgan). Decrease probably caused by rabbit traps.

LONG-EARED OWL (*Asio o. otus*).

Not mentioned as a breeder by Clark : since then three records ; St. Kew, about 1924 (Willcocks, *in litt.*), Mawgan, in 1927 (Ryves), and Kilkhampton about 1934 (Peter, *in litt.*). A rare owl, though it may be overlooked.

SHORT-EARED OWL (*Asio f. flammeus*).

Not mentioned as breeder by Clark ; has since bred sparingly for a number of years in a certain upland area, and twice elsewhere.

BRITISH TAWNY OWL (*Strix aluco sylvatica*).

No change ; generally and widely distributed. Much the commonest owl.

WHITE-BREASTED BARN-OWL (*Tyto a. alba*).

Evidence of increase of late years ; now thinly distributed throughout the county.

PEREGRINE FALCON (*Falco p. peregrinus*).

Decrease noted before the present war. Since, breeding stock seems to have been exterminated by Government war time action.

Scilly : Has not bred for some years.

KESTREL (*Falco t. tinnunculus*).

Maintaining status well ; distributed generally on coastal cliffs. Fewer inland and less successful. Local decrease in one or two areas.

Scilly : Now only an occasional breeder (Dorrien Smith, *in litt.*).

COMMON BUZZARD (*Buteo b. buteo*).

Great general increase ; has spread to the Land's End peninsula, is well distributed in the county, and common in mid-Cornwall.

MONTAGU'S HARRIER (*Circus pygargus*).

Definite increase ; has recently established itself in a certain area.

SPARROW-HAWK (*Accipiter n. nisus*).

Maintaining its status in small numbers throughout the county, often by breeding in entangled "marshy bottoms."

COMMON HERON (*Ardea c. cinerea*).

No apparent change of status. Five small heronries are distributed in the county, and some isolated nests both inland and on coastal cliffs.

SHELD-DUCK (*Tadorna tadorna*).

Has increased and spread its breeding range to the west. Common only on the Camel and at St. Germans.

Scilly : Was breeding in 1923 on Tresco, protected (Wallis), but does not breed now.

MALLARD (*Anas p. platyrhyncha*).

Great decrease in Wadebridge area, no marked change elsewhere. Not a very common duck anywhere.

Scilly : No change, still breeds in small numbers.

GADWALL (*Anas strepera*).

Scilly : Dorrien Smith informs us that this species has been known to breed on Tresco since 1934, but whether it has done so every year has not been definitely established. In a recent year a nest was found on Tean. In August and September, 1944, seven Gadwall were shot, six of which were immature birds, from which it seems probable that at least two pairs bred.

TEAL (*Anas c. crecca*).

Always a rare breeder, and is decreasing. A few definite breeding records only.

Scilly : Now breeds most years on Tresco (Dorrien Smith, *in litt.*).

PINTAIL (*Anas a. acuta*).

A pair bred in west Cornwall in 1938, the only record (see *The Handbook*, Vol. iii, p. 272).

TUFTED DUCK (*Aythya fuligula*).

A brood was reported in 1937 (Michael Rogers).

CORMORANT (*Phalacrocorax c. carbo*).

No change; breeds in comparatively widely separated stretches of cliff, mainly in small colonies. On parts of the north coast there are many miles harbouring Shags, but no Cormorants.

Scilly: Decrease since 1906, when abundant. Now about 60 pairs breed, divided between two or three islands (Dorrien Smith, *in litt.*).

SHAG (*Phalacrocorax a. aristotelis*).

No change, common on all coasts suitable for breeding. Markedly big population compared with much scarcer Cormorant.

Scilly: No change; common.

STORM-PETREL (*Hydrobates pelagicus*).

Decrease: only one breeding station known, an island off the north coast.

Scilly: Still breeds in numbers on Annet, and some on other suitable islands.

MANX SHEARWATER (*Puffinus p. puffinus*).

Has ceased to breed: no known breeding station now. A small colony at Kellan Head believed to have been wiped out in 1937 (Hartley). Remains of birds found near The Rumps in 1937 (Willcocks), but not since. Birds visit sections of the south coast from Lizard to parts of the north coast, but breeding not proved. (Clark in 1906 records small colony near Newquay. There is a stretch of country between Porth Joke and Holywell honeycombed with rabbit burrows which might conceivably have harboured Shearwaters and Puffins).

Scilly: Still breeds in numbers on Annet and a few on the north end of Tresco. In 1923 Wallis suggests a decrease, owing to persecution by Great Black-backed Gulls. In spite of this the bird is spreading and several islands have a few (Dorrien Smith, *in litt.*).

FULMAR PETREL (*Fulmarus g. glacialis*).

Birds began prospecting in small numbers in 1936, increasing every year. Now prospecting at one station on south coast, and at several on north coast as far as Tintagel, at one of which (only) breeding was proved to have begun in 1944; prospecting at this site was first recorded in 1939. Largest colony at Camborne north Cliffs, where breeding began in 1945. Breeding in 1945 also proved elsewhere.

Scilly: Prospecting sites, but breeding not proved up to 1944.

LITTLE GREBE (*Podiceps r. ruficollis*).

Maintaining its status as a sparse breeder. Present in summer on various waters in mid- and east Cornwall, where breeding proved in 1945. Definite records in 1932 and 1933 on Bodmin moor (Machell Cox).

WOOD-PIGEON (*Columba p. palumbus*).

-The enormous increase in the last ten years in Mawgan (Newquay) area has not, inexplicably enough, reflected itself in other parts of the county.

Scilly : Great decrease since 1906 (Clark). In 1923, only one or two pairs noted on Tresco (Wallis). In 1938 only seen on Tresco (Harvey). Is still breeding thinly on Tresco (Dorrien Smith, *in litt.*).

STOCK-DOVE (*Columba oenas*).

Slight increase, but not a common bird in the county as a whole. Chiefly occurs in Wadebridge area in fair numbers, and also breeds sparsely on coastal cliffs. Does not breed in the Land's End peninsula, except in Trengwainton woods (Bolitho, *in litt.*).

ROCK-DOVE (*Columba l. livia*).

Believed to be extinct.

TURTLE-DOVE (*Streptopelia t. turtur*).

Only one record of ever remaining to breed, namely in 1944 on the extreme eastern boundary of the county (Craddock, *in litt.*).

Scilly : Recorded by Clark as having nested once. Since then, though there have been three reports of June occurrences, no evidence of breeding has been forthcoming.

COMMON CURLEW (*Numenius a. arquata*).

No change ; breeds in fair numbers on the moors and uplands. Scarce in the west.

COMMON SNIPE (*Capella g. gallinago*).

No change ; breeds somewhat thinly on moors and uplands, mainly in the north of the county. Not recorded in the Land's End peninsula.

Scilly : Present on St. Mary's in the breeding season, but nesting still not confirmed (Dorrien Smith, *in litt.*).

SOUTHERN DUNLIN (*Calidris alpina schinzii*).

No change ; a scarce breeder, and then on Bodmin moor only. A nest found there in 1932 and 1933 (Machell Cox).

COMMON SANDPIPER (*Actitis hypoleucus*).

No longer breeding. One record in 1910 at Penzance Reservoir, but nothing since (A. W. H. Harvey, *in litt.*).

RINGED PLOVER (*Charadrius h. hiaticula*).

Decreasing as breeder ; breeds sparingly, probably disturbed by greatly increased human traffic, and scarcely, if at all now, in the Land's End peninsula.

Scilly : Breeds in good numbers in all suitable areas.

LAPWING (*Vanellus vanellus*).

No change ; breeds commonly in small colonies in most of the county, but sparsely in the west.

BRITISH OYSTER-CATCHER (*Hæmatopus ostralegus occidentalis*).

A noticeable small increase. Breeds at intervals along the coasts, notably the north coast. Fairly common generally, but absent in the Land's End peninsula.

Scilly : Still breeds abundantly.

SANDWICH TERN (*Sterna s. sandvicensis*).

No record of ever having bred.

Scilly : Is no longer breeding (*The Handbook* gives 1879 as the last date).

ROSEATE TERN (*Sterna d. dougallii*).

Has never bred.

Scilly : Appears to be re-establishing itself after extinction in 1867. In 1920, two pairs appeared (King), and in 1924 one pair (Boyd). In 1943 five pairs were found nesting (Wakefield, *in litt.*), and it is confirmed that they bred again in 1944 (Dorrien Smith, *in litt.*).

COMMON TERN (*Sterna h. hirundo*).

Has ceased to breed.

Scilly : Still breeds freely in fluctuating numbers (1914, Robinson; 1923, Wallis; 1924, Boyd; 1937, Valentine; 1938 Harvey; 1943, Parrinder).

ARCTIC TERN (*Sterna macrura*).

Has never bred.

Scilly : Had grown very scarce in 1923 (Wallis); in 1924 one immature bird reported (Robinson); believed not breeding now.

LITTLE TERN (*Sterna a. albifrons*).

Has ceased to breed.

HERRING-GULL (*Larus a. argentatus*).

Maintains abundance of breeding population on most coasts, though scarce in Bude district.

Scilly : Breeds abundantly.

BRITISH LESSER BLACK-BACKED GULL (*Larus fuscus graellsii*).

Apparent increase through extension of range northwards. No longer breeding on sites quoted by Clark, but nesting singly or in small scattered colonies over the whole coast, except in the Land's End peninsula. Noticeably scarcer than Great Black-backed and hardly common (*cf. Brit. Birds*, Vol. xviii, p. 168).

Scilly : Common on all suitable islands.

GREAT BLACK-BACKED GULL (*Larus marinus*).

Has greatly increased and breeds on all coasts except round Bude (*cf. Brit. Birds*, Vol. xviii, p. 168).

Scilly : Great increase. In 1906 "in limited numbers" (Clark). In 1923, "200 pairs near the mark" (King). Now breeds abundantly.

KITTIWAKE (*Rissa t. tridactyla*).

Probably no great change, though two of the sites mentioned by Clark are no longer occupied. Only two known breeding colonies: one near Land's End of 100-150 pairs (Harvey), and another about 10 miles away (Morvah), of apparently much more recent growth, now holding about 150 pairs (Quick). Other sites have been prospected.

Scilly : Ceased to breed after 1900, but a few pairs bred again on Menavawr in 1938 (Harvey), but not in 1944 (Dorrien Smith, *in litt.*).

BRITISH RAZORBILL (*Alca torda britannica*).

No change ; common, breeds at many places on all coasts.

Scilly : Breeds abundantly.

SOUTHERN GUILLEMOT (*Uria aalge albionis*).

No change ; rare compared with Razorbill. A few pairs breed in isolated sites scattered along the whole coast except round Bude.

Scilly : Recorded as scarce in 1906 (Clark), and in 1914 had become "very scarce indeed" (Robinson). The shortage was noticed again in 1937 (Valentine), and, in 1938, was "much scarcer," though seen in numbers on Menavawr (Harvey).

SOUTHERN PUFFIN (*Fratercula arctica grabæ*).

Decreasing, no longer breeds on south coast, but confined to the north, where there is a large colony at Lye Rock, a smaller one near Trevone (where many nest in natural rock recesses), and one at The Rumps, where stated to be decreasing.

Scilly : Also decreasing. In 1906 "thousands" on Annet, and breeding on ten other islands (Clark). In 1924, great decrease reported (King). In 1938, small numbers on Annet, Mincarlo and Manavawr (Harvey). In 1944, reported as becoming comparatively scarce (Dorrien Smith, *in litt.*).

CORN-CRAKE (*Crex crex*).

Great decrease in the last 20 years, though a recent, but definite local increase in the extreme north near Tamarstone (Craddock, *in litt.*). A few birds in widely separated areas have been recorded yearly for the last 15 years and, although only one nest was reported, in 1938, near Polzeath (Macmillan), some of them, it may be assumed, were actually breeding (*cf. Brit. Birds*, Vol. xxxviii, p. 142).

Scilly : Breeds occasionally (Dorrien Smith, *in litt.*).

WATER-RAIL (*Rallus a. aquaticus*).

No apparent change. Data are very scarce and there are no records of actual nests, but there are reports of birds present in summer in several places, suggesting that breeding probably occurs at some waters.

MOORHEN (*Gallinula ch. chloropus*).

No change ; generally distributed and common.

Scilly : Breeds thinly on Tresco.

COOT (*Fulica a. atra*).

Probably no change, only one nesting record, in 1911, at Marazion (A. W. H. Harvey, *in litt.*). Breeding proved near Callington in 1945.

Scilly : Still breeds.

PHEASANT (*Phasianus colchicus*).

No change, common where preserved.

Scilly : Introduced and breeds.

COMMON PARTRIDGE (*Perdix p. perdix*).

No change, seasonal fluctuations ; scarce in the Land's End peninsula.

QUAIL (*Coturnix c. coturnix*).

No change. Except a possible case at St. Ives in 1939 (Valentine), there are no breeding records outside the Wadebridge district, where birds have bred annually in very small numbers for many years. Status appears stationary in the above area.

Seilly: A pair bred on St. Mary's in 1938 (Harvey), and in 1944 (Dorrien Smith, *in litt.*).

SUMMARY.

The following birds were noted by Clark as "having bred at least once" prior to 1906. They have not been recorded since, and have not been included in the above list or the summaries which follow:—

Hawfinch, Hoopoe, Turnstone (breeding in British Isles not admitted in *The Handbook* and we consider Clark's statement to be erroneous), Redshank, Spotted Crake, Woodcock.

The following birds have also been omitted:—

Red-backed Shrike (last recorded nest 1902), Hen-Harrier (1905), Black Grouse (1904), and, at Scilly, Spotted Flycatcher (1903).

We append below lists of species which have increased or decreased in Cornwall and Scilly since 1906. Those few species which do not appear to conform to the general or local tendency of change in the British Isles as outlined by Alexander and Lack (*Brit. Birds*, Vol. xxxviii, pp. 42-5, 62-9, and 82-8), are marked with an asterisk.

INCREASES—CORNWALL.

- (A) *The following additional species have bred or are breeding: (9)*
Lesser Whitethroat, Black Redstart, Little Owl, Long-eared Owl, Short-eared Owl, Pintail, Tufted Duck, Fulmar Petrel, Turtle-Dove.
- (B) *The following species show a general increase: (19)*
Carriion Crow, Magpie, Jay, Starling, Greenfinch, Goldfinch, Bullfinch, Cirl Bunting, Wood-Lark*, Grasshopper-Warbler*, Great Spotted Woodpecker, Barn-Owl, Buzzard, Montagu's Harrier*, Sheld-Duck, Stock-Dove, Oystercatcher, Lesser Black-backed Gull, Great Black-backed Gull.
- (C) *The following species show definite but only local increase: (2)*
Wood-Pigeon (Newquay area), Corn-Crake (Tamar area).
- (D) *The following species have increased in the Land's End peninsula but not throughout Cornwall: (2)*
Long-tailed Tit, Mistle-Thrush.
- (E) *The following species have spread westwards, and now breed in the Land's End peninsula: (7)*
Jay, Starling, Grey Wagtail, Nuthatch, Great Spotted Woodpecker, Buzzard, Sheld-Duck.

INCREASES—SCILLY.

- (A) *The following species have begun to breed : (16)*

Starling, Greenfinch, Goldfinch, Crossbill, Chaffinch, Wood-Lark, Tree-Pipit, Great Tit, Goldcrest, Garden-Warbler, Mistle-Thrush, House-Martin*, Swift*, Nightjar*, Gadwall, Teal.

[NOTES.—(a) As the few asterisks show, the majority of these are in agreement with the general trend in the British Isles.
 (b) Only Starling, Greenfinch, Goldfinch and Wood-Lark are related to the general trend in the county as a whole, as shown in (B) above.
 (c) Only Starling and Mistle-Thrush are related to increase in the Land's End peninsula, as shown in (D) and (E) above.]

- (B) *The following species have started to breed again, after becoming extinct in the last century : (2)*

Roseate Tern, Kittiwake.

- (C) *The following species show increase : (3)*

Linnet, House-Sparrow, Great Black-backed Gull.

DECREASES—CORNWALL.

- (A) *The following species have ceased to breed : (7)*

Reed-Warbler*, Redstart, Manx Shearwater, Rock-Dove, Common Sandpiper*, Common Tern*, Little Tern*.

- (B) *The following species show a general decrease : (17)*

Chough, Corn-Bunting, House-Sparrow*, Spotted Flycatcher, Dartford-Warbler, Ring-Ouzel, Wheatear, Dipper*, Swallow, House-Martin, Sand-Martin, Cuckoo*, Peregrine Falcon, Storm-Petrel*, Ringed Plover*, Puffin, Corn-Crake.

[NOTE.—The decline of the three hirundines, compared with the well maintained status of the Swift, is a matter of some interest.]

- (C) *The following species have decreased locally : (3)*

Chaffinch, Pied Wagtail, Mallard.

DECREASES—SCILLY.

- (A) *The following species have ceased to breed : (5)*

Corn-Bunting, Pied Wagtail, Peregrine Falcon, Sandwich Tern, Arctic Tern.

- (B) *The following species show a general decrease : (6)*

Wheatear, Kestrel*, Cormorant*, Wood-Pigeon*, Puffin, Corn-Crake.

[NOTE.—Only Wheatear, Puffin and Corn-Crake are related to the general trend in the county.]

REGIONAL DISTRIBUTION.
CORNWALL.

From the account already given it will be seen that 112 species breed in the county (and 55 in Scilly).

Of these the following are either scarce, but regular, breeders, or only sporadic and exceptional breeders :

(a) *Scarce but regular* (14).

Chough, Tree-Pipit, Wood-Warbler, Ring-Ouzel, Black Redstart, Lesser Spotted Woodpecker, Short-eared Owl, Montagu's Harrier, Teal, Little Grebe, Water-Rail, Corn-Crake, Coot, Quail.

(b) *Sporadic and exceptional* (9)

Blue-headed Wagtail, Yellow Wagtail, Lesser Whitethroat, Dartford-Warbler, Long-eared Owl, Pintail, Tufted Duck, Turtle-Dove, Dunlin.

On account of their rarity, these birds have not been included in the following statements of comparative distribution.

There is a marked decrease in the number of breeding species as the western end of the county is approached. Yet, strangely perhaps, the only two mainland colonies of Kittiwakes are situated in the Land's End peninsula, and the only breeding records of Blue-headed Wagtail, Yellow Wagtail, Reed-Warbler, and Pintail are also in this area.

[NOTE.—The gradual spread to the west of a number of species (shown in increases, E.), may be of interest in this connection.]

The following lists show that there are 27 species which, though normally distributed in the rest of the county, are, in the Land's End peninsula :—

(a) *Scarcer* (18).

Jay, Starling, Bullfinch, Cirl Bunting, Wood-Lark, Sky-Lark, Grey Wagtail, Nuthatch, Blackcap, House-Martin, Kingfisher, Great Spotted Woodpecker, Sheld-Duck, Stock-Dove, Curlew, Ringed Plover, Lapwing, Partridge.

(b) *Absent* (9).

Garden-Warbler, Whinchat, Dipper, Heron, Storm-Petrel, Snipe, Oyster-catcher, Lesser Black-backed Gull, Puffin.

[NOTE.—It is curious that the Oyster-catcher and the Lesser Black-backed Gull, both of which have extended their range from Scilly eastwards up the coast of the county, should be missing from the Land's End peninsula, which would seem the natural first step on the journey.]

SCILLY.

The following species, though normally distributed on the mainland, are either sporadic and exceptional breeders, or entirely absent from the islands. It will be noted that twenty of these are also absent or scarce in the Land's End peninsula.

(a) *Exceptional* (6).

Carrion-Crow, Wood-Lark, Garden-Warbler, House-Martin, Kestrel, Kittiwake.

(b) *Absent* (43).

Raven, Rook, Jackdaw, Magpie, Jay, Bullfinch, Corn-Bunting, Yellow Bunting, Cirl Bunting, Reed-Bunting, Grey Wagtail, Pied Wagtail, Tree-Creeper, Nuthatch, Blue Tit, Coal-Tit, Marsh-Tit, Long-tailed Tit, Spotted Flycatcher, Chiffchaff, Willow-Warbler, Grasshopper-Warbler, Blackcap, Whitethroat, Whinchat, Dipper, Sand-Martin, Kingfisher, Green Woodpecker, Great Spotted Woodpecker, Little Owl, Tawny Owl, Barn-Owl, Peregrine, Buzzard, Sparrow-Hawk, Heron, Sheld-Duck, Stock-Dove, Curlew, Snipe, Lapwing, Partridge.

[It will be noted that all species of buntings, wagtails, woodpeckers and owls are absent, and the crows, tits, warblers and hawks are represented by one or two species only.]

The following species are peculiar to Scilly : (5)

Crossbill, Gadwall, Manx Shearwater, Roseate Tern, Common Tern.

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THE SONG OF THE WHITE WAGTAIL IN WINTER QUARTERS

BY

MAJOR P. H. T. HARTLEY.

WHITE Wagtails (*Motacilla a. alba*) are very common winter residents in Lower Egypt. The birds arrive in the Cairo area in the first days of October (October 1st, 1942; October 4th, 1943), and are soon distributed over farm-lands, in towns and villages and along the fringes of the desert. Return migration begins in the middle of March. The last White Wagtails are seen in mid-April (April 12th, 1942; April 10th, 1944).

The song of the White Wagtail is "recorded as frequent from migrants in Egypt" (Tucker, 1938)*. In the years 1941-1944 the writer was able to study the singing of this subspecies near Helwan in Lower Egypt. The periods of observation were:—

October 21st—December 23rd, 1941.

December 29th, 1941—October 14th, 1942.

October 22nd—November 18th, 1942.

Summer, 1943—November 18th, 1943.

December 19th, 1943—February 2nd, 1944.

February 13th, 1944—after spring migration.

Observations were also made near Baghdad in March, 1943.

Two methods of recording were available when observations had to be made in the course of the day's duties. One was to record simply the hours in which song was heard: the other and rather more detailed method was to make a record of each burst of song. In 1941-42 only the hours when song was heard were recorded; in 1943-44 a schedule was made of every incident of song. When results obtained by the two systems were compared, using the 1943-44 figures, it was found that the two methods gave pictures of the song which were closely alike, both in variation from month to month and in variation in the course of the day. "Hours when song was heard" is the basis of presentation in this paper.

In Table I are shown the number of hours when song was heard in each month and the average number of hours song per day of observation.

TABLE I.

Month	1941-42			1942			1943-44		
	Hours of Song	Days of Obs.	Ratio	Hours of Song	Days of Obs.	Ratio	Hours of Song	Days of Obs.	Ratio
X	0	12	0	6	25	0.24	7	28	0.25
XI	3	30	0.1	6	17	0.35	8	18	0.44
XII	22	26	0.85	—	—	—	11	13	0.85
I	9	31	0.29	—	—	—	10	31	.032
II	35	28	1.28	—	—	—	7	18	0.39
III	66	30	2.2	—	—	—	29	31	0.94

("Ratio" is the ratio of hours with song per month to days of observation).

* Based on M. J. Nicoll, *Ibis*, 1909, p. 299.—B.W.T.

It will be seen that there are two peak periods of song, one in December and the second in March. The first or "autumn" period ends early in January and there is about a fortnight (January 11th-23rd, 1942; January 12th-22nd, 1944) without song before the beginning of the second "spring" period wherein song increases steadily until the departure of the wagtails on spring migration. The gap between the two song periods is in the coldest month of the winter: but in 1942 the first ten days of January had an average temperature about 2°C below that of the silent period, and in 1944 there was less than 0.5°C difference in average temperature between the first, second and last thirds of January, so that it seems unlikely that the falling away of song in the first month of the year is due to the direct influence of cold alone.

In 1941-42 the "autumn" song began very late; no song at all was heard in October and very little in November. The "spring" song of 1944 was of notably less volume than that of 1942. It is not easy to account for this difference, for though the average mid-day shade temperatures of January and February were lower in 1944 than in 1942 (Table II), March, 1944 was as warm as March, 1942.

TABLE II.

			1942	1944
January ...	...	...	18.2°C.	16.9°C.
February	...	...	22.1°C.	19.9°C.
March ...	...	...	23.5°C.	23.7°C.

Average Mid-day Temperatures at Helwan.

In addition, counts made by car transect over a 16 mile stretch of road between Helwan and Cairo suggest that White Wagtails were more numerous in March, 1944 than in that month in 1942. The increase in the amount of song in March of each year is clear.

Alexander (1927) recorded an autumn song period for the White Wagtail in Italy, beginning in late September and continuing through October and November to early December: spring song began in mid-January. The "autumn" song of the White Wagtail in Italy therefore ends about the time when it is reaching its peak farther south and is separated by a longer period from the beginning of spring song.

When the two song periods were compared it was found that there was a distinct difference between the "autumn" and "spring" in the distribution of song through the day. In Table III are shown the number of times when song was heard in each hour of the day in the two periods. The results for 1941-42 and 1943-44 are also shown graphically in Figure 1.

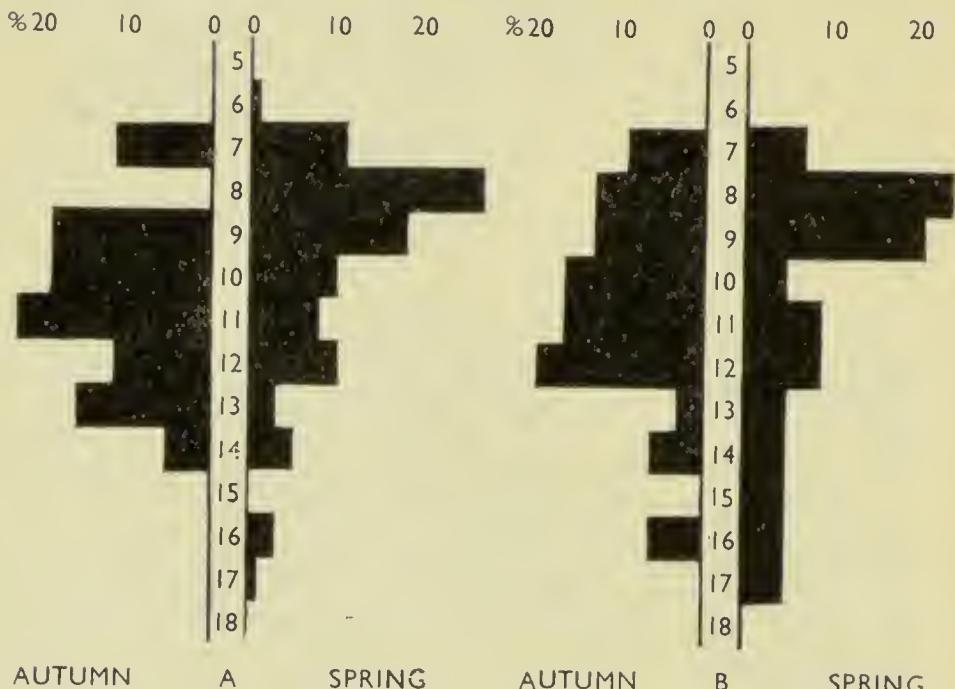
TABLE III.

Hour	05	06	07	08	09	10	11	12	13	14	15	16	17	18
"1941-42. "Autumn"	No. %	— —	— —	3 11	— 18	5 18	5 18	6 22	3 11	4 15	1 5	— —	— —	— —
"Spring"	No. %	— —	1 1	14 13	29 27	20 18	11 10	9 8	11 10	3 3	5 5	— —	3 3	1 1
1942. October & November.	No. %	— —	— —	— —	— —	— 25	4 33	1 8	1 8	— —	1 8	2 16	— —	— —
"1943-44. "Autumn"	No. %	— —	3 9	4 12½	4 12½	5 16	5 16	6 19	1 3	2 6	— —	2 6	— —	— —
"Spring"	No. %	— —	3 7	10 24	9 21	2 5	4 9	4 9	2 5	2 5	2 5	2 5	2 5	— —

Numerical and Percentage Distributions of White Wagtail Song through the Hours of the Day.

It will be seen that in the "autumn" periods the bulk of the song comes in the late forenoon, in the hours 09 to 12. In the "spring" the major part of the song comes earlier in the morning—the hours 08 and 09. At Baghdad in March, 1943, this early morning song was even more marked. 60 per cent. of all hours with song were in the hours 06 and 07.

FIGURE I.



Comparison of the Distributions of Song through the Day in the "Autumn" and "Spring" Song-periods of the White Wagtail in Egypt.

A. 1941-1942.

B. 1943-1944.

White Wagtails usually sang while pattering to and fro on the ground, but on four occasions (October 30th, 1942, October 13th, 1943 and twice on March 16th, 1944) a bird was observed singing on a perch. On every occasion the perch was in shade and the temperature at the time was over 24°C. The highest temperatures when song was heard was 34.8°C. at 16.23 hours on October 14th, 1943 and 32.9°C. at 12.55 hours on March 25th, 1942. The lowest temperature with song was 5.9°C. shortly after 07.00 hours on January 7th, 1942. The infrequent winter rainstorms did not set the wagtails singing.

During November and December there was a good deal of "courtship" display between couples of White Wagtails. There was much running to and fro and chasing, and frequent short flights when the birds flew with their bodies almost vertical and their tails pointing straight down. The first records of pair formation were made just at the end of the "autumn" song period (January 4th, 1942, January 7th, 1944). Only once was song observed to accompany sexual display. This was at 08.34 hours on February 18th, 1944, when one bird, with tail cocked up at an angle of about 60° and its wings trailed and shivered, pattered about behind and to one flank of another bird : as it ran it kept up a soft, gabbling song.

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STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

THE series now introduced will aim at providing first-rate camera studies of many of the rarer birds on the British List or of species which, though they may be more or less frequent in parts of the British Isles during a portion of the year, are seldom photographed owing to their not breeding with us, or for other reasons. As was stated in announcing the series (*antea*, p. 2), our reason for introducing it is not to foster any notion that the rare birds are more deserving of attention than the common ones, but simply that excellent photographs of most British breeding birds, both common and rare, are readily available in numerous books, and in many cases in back volumes of *British Birds* itself, whereas photographs of the species which it is now intended to illustrate are not.

For our purpose we shall avail ourselves of a number of photographs taken by colleagues on the Continent, as well as others taken abroad by British bird-photographers. Though original photographs will naturally be preferred, we shall be prepared in certain cases, by arrangement with the owners of the copyright, to include certain unique or particularly noteworthy photographs which have appeared before elsewhere. The illustrations of each species will be accompanied by brief notes on the lines of those below. In a number of cases it is believed that the photographs apart from their intrinsic interest will be definite aids to field identification when the species are met with in life, and in certain instances we shall publish photographs of related commoner species at the same time to facilitate comparison.

I. THE ROUGH-LEGGED BUZZARD.

Photographed by H. N. SOUTHERN.

(Plates 7 and 8).

THE Rough-legged Buzzard (*Buteo l. lagopus*) is the buzzard of the arctic and sub-arctic regions of Europe, with other races of the same species in Siberia and arctic America. It occurs in the British Isles in winter, being tolerably frequent in East Anglia and northwards along the east coast of Great Britain to the northern islands of Scotland, occasionally appearing in some numbers; in most other parts of the British Isles it is a scarce or rare to very rare visitor.

In the northern forest-belt the Rough-legged Buzzard breeds in trees like the Common Buzzard, but its range extends far beyond the tree-limit into barren tundra country, where it nests on cliffs and amongst rocks or even on the ground. Mr. Southern's photographs were taken in Swedish Lapland in 1937. The characteristic feathering of the tarsus cannot be seen, but the largely white tail, which is hardly less characteristic, is very well displayed in plate 7.

B.W.T.



ROUGH-LEGGED BUZZARD (*Buteo l. lagopus*) AT NEST.
(Photographed by H. N. Southern).



ROUGH-LEGGED BUZZARD (*Buteo l. lagopus*) AT NEST.
(Photographed by H. N. Southern).



UPPER.—MALE KENTISH PLOVER ON EGGS.

LOWER.—FEMALE KENTISH PLOVER INCUBATING.
(Photographed by Fr. Haverschmidt).



ROCKALL, May 27th, 1945 : 24 or 25 Guillemots visible on broad ledge.
(R.I.P. official photo ; Crown copyright reserved).

SOME CRITICISMS ON THE RECORDING OF INCUBATION-PERIODS OF BIRDS

BY

LT.-COLONEL B. H. RYVES.

IN the light of recent advance in knowledge of the processes of incubation by wild birds—a knowledge still with many gaps—I believe that a brief examination of certain literature on the subject is now advisable and necessary.

In my papers published in this magazine (*antea*, Vol. xxxvii, pp. 10-16 and pp. 42-49) and in Mr. B. W. Tucker's paper (*ibid.*, pp. 22-28), an effort was made to explain the distinction between "incubating" and "brooding" eggs. It was shown that although definite incubation may be started with the laying of the last egg or even with an earlier one, birds will sometimes postpone the commencement of incubation and sometimes "brood" their eggs for a time after the clutch has been completed, as well as before this.

Prior to the publication of these papers, it seems to have been the general practice to record the incubation-period of most species from the date of clutch completion. The "niceties" of incubation were not sufficiently appreciated.

Having outlined some of the important points connected with incubation which we are now beginning to understand, I must go back some 16 years to a much less enlightened period and discuss some of the points in my short paper published in Vol. x xii, pp. 203-5, entitled "Variability in Incubation- and Fledging-Periods." I must at once say that the figures in the table of incubation and fledging-periods there given, cannot be regarded to-day as reliable data, for the simple reason that in all the examples given incubation was automatically reckoned to have started on the day the last egg of each clutch was laid. Without satisfactory details, we cannot accept such an assumption at the present time.

The criticism I have just made will be readily understood if I enlarge on some of the figures in the table. For instance in the case of the Robin (*Erythacus rubecula melophilus*) two cases of incubation-periods of 12 days are given and one of 16 days. Of the last of these it is stated that the bird

laid her fifth and last egg on April 10th, 1925, and remained on her nest the whole day and following night. At 8 a.m. on April 11th I found her absent from her nest and she stayed away till 6 p.m., when she brooded again and was settled down, later, for the night. On April 12th she brooded normally until 2 p.m., when she quitted and stayed away till 7 p.m., then returning for the night. From April 13th onwards she incubated normally, and on April 26th hatched three of her eggs, two being addled, and the brood was reared.

I now think it probable that incubation really started on the evening of April 12th or early on the 13th, making the period 13 days,

not 16. A protracted case of a similar type—also of a Robin—has been described in Vol. xxxvii, p. 46.

Under Nuthatch (*Sitta europaea affinis*) one incubation-period of 13 days and one of 17 days are recorded. As regards the second case, though no details are given, I incline to the belief that there may have been a period of “casual brooding” after the full clutch was laid. If so, the period may well have been less than 17 days.

Four incubation-periods are recorded for broods of the Hedge-Sparrow (*Prunella modularis occidentalis*), two of 15 and two of 11 days. I now consider these figures almost valueless*. With the two “fifteens” incubation may have commenced a day or two after the last egg. With the two “elevens” it may have begun with an egg prior to the last : in any case the fact of there having been infertile eggs in both nests vitiates the figures as exact records. Without close details being given such records should not be accepted to-day.

The single Cirl Bunting (*Emberiza c. cirlus*) case recorded in the paper presents a very difficult problem and affords clear proof of the lack of our knowledge on a very important point—to what extent does prolonged cooling of the eggs retard development or actually cause fatality?

The bird laid her second egg on May 16th and sat on them for the night. On May 17th she deposited her third and last egg and began, apparently, regular incubation. On May 19th she was absent for three hours and the eggs became quite cold to the touch. On May 21st, at 4 p.m., I found the eggs very cold, and when I went again at 8 p.m., though she was again absent, the eggs were just warm. I did not visit the nest again until May 27th, when the eggs were almost ice-cold to the touch, but I saw her, later on, return to the nest. After this date I never found the eggs cold and on June 3rd, in the late afternoon, one egg was hatched, the nestling appearing to be quite normal. Unfortunately the hen was killed that evening. Next day the nestling was, of course, dead. I broke the two eggs and found one to be addled, but the other contained a dead bird that I reckoned had been ready to break shell within a few hours.

Here the nestling hatched 17 days after completion of the clutch, in spite of the eggs having been allowed to become very cold during the prolonged absences of the female on several days after apparently normal incubation had started. It may, however, be in order to remark here that at that time I was not practised in the intensive observation which later became a regular habit.

The following intensive observations of one pair of Cirl Buntings, made in 1945, illustrate, I think, the great caution needed in recording an *apparently* lengthy incubation-period. The pair made two nestings, the details of which are :—

* As records of incubation-periods, but valuable, of course, as records of periods that may elapse between the completion of a clutch and the hatching of the first chick.

First Nest.

April 27th.	First egg.
„ 29th.	Third and last egg. No brooding.
„ 30th.	No brooding.
May 1st.	Incubation began and proceeded normally.
„ 15th.	Two eggs hatched, the third infertile.
<i>Period since clutch completed</i>	... 16 days.
<i>Incubation-Period</i>	... ... 14 „

Second Nest.

June 5th.	First egg.
„ 8th.	Fourth and last egg. Incubation began and proceeded normally.
„ 22nd.	Three eggs hatched, the fourth infertile.
<i>Period since clutch completed</i>	... 14 days.
<i>Incubation-Period</i>	... ... 14 „

As the Editor very rightly says in a letter to me, we do not know at present how sustained sitting on eggs has to be for development to proceed, and, of course, I entirely agree with him, that an investigation to settle the point will have to be undertaken sooner or later—sooner, I hope. However, in my own experience, cases of serious chilling of the eggs are very exceptional. The only other example I can recall, though a very much milder one than that of the Cirl Bunting, has been described in Vol. xxxvii, p. 47 (No. 3 Robin).

In conclusion, may I be allowed to repeat what I wrote in my paper in Vol. xxii, already quoted?—"The main difficulty, as it appears to me, is the question—when does incubation actually begin? Does this change necessarily take place, with all birds, soon after brooding is in process? Is it not possible that, in some cases, the eggs may be covered for a time without producing any definite change?" I submit that these questions have only been partially answered. Much work still lies ahead.

NOTES.

BIRDS ON ROCKALL, 1945.

(see plate 10).

FISHER (*Bull. Brit. Orn. Cl.*, 62, pp. 5-13), has compiled the history of the birds of Rockall up to 1941, and has shown that Gannets (*Sula bassana*) and Kittiwakes (*Rissa t. tridactyla*) use it as a resting-place, without breeding; while Guillemots (*Uria aalge*) inhabit the only broad ledge on the rock, on which they have probably bred in the past, and may have bred (though this was not proved), in 1941.

Pilots of Coastal Command, R.A.F. have continued to visit Rockall regularly since 1941. On May 27th, 1945, photographs were taken from an aircraft flying at about 100 feet, which show, quite clearly, 24 or 25 Guillemots on the broad ledge. Although the photograph was excellent it was not possible to detect any eggs on the ledge.

On July 24th, 1945, at 07.40 hours B.D.S.T., I flew over Rockall. Eight Guillemots, of which six flew off, were on the ledge. Eight to twelve Kittiwakes and two immature gulls of the genus *Larus*, and of the size of Herring-Gulls were flying round.

Though I made about a dozen runs over Rockall the two remaining Guillemots stayed on the broad south-west ledge. I could not, however, detect any young. The date was presumably too late for eggs, which could have explained the close sitting of the two birds.

At 08.00 hours, I saw about 20 Fulmars following a fishing vessel about 10 miles east of Rockall. I saw no Gannets on or near Rockall.

The presence of gulls of the genus *Larus* (which could have been either Herring-, Lesser Black-backed or Iceland Gulls, probably not Glaucous and certainly not Great Black-backed or Common Gulls) is interesting, as it is the first record of birds of this genus at Rockall. Fisher has shown that records in 1887 and 1894 are unreliable.

ROBERT A. HINDE.

GATHERINGS OF RAVENS IN BRECONSHIRE.

THE increase of the Raven (*Corvus c. corax*) during the last thirty years in South Wales is well known, but lately the rate of increase has become almost startling. While I was stationed in the barracks at Brecon during the war, it was noticed that the local Ravens had established a "gliding school" over Slwch Tump, about 600 yards to the north of the town. During every autumn whenever there was a south or south-west wind, numbers of Ravens attended daily to play about in the upward draught over the hill. Twenty and more were frequently seen in the air at once. The most seen together at one time was thirty-two on a November morning in 1944.

It appeared that courtship and mating of unpaired birds also took place during this time. The Ravens used to arrive in September. After November the numbers decreased, until shortly after Christmas they appeared no more. In November it was noticeable that most of the birds were flying in pairs. H. A. GILBERT.

INCREASE OF SISKINS IN DUMFRIESSHIRE.

THE Siskin (*Carduelis spinus*) has of course been known as a Dumfriesshire bird for a very long time. Records of breeding and of occasional large flocks are given in Gladstone's *The Birds of Dumfriesshire*; but there can be no doubt that at present it occurs in greatly increased numbers. I and others have seen several pairs in the parish of Tynron in the nest seasons of 1944 and 1945, so that it has become a quite familiar sight. In both these years I have seen family parties of old and young. On September 5th, 1945, I saw a flock of about ten immediately beside my house, and on September 10th I saw about eight a mile or so away. At both these spots I had repeatedly seen mated pairs earlier in the season, so there can, I think, be little doubt that these were local birds. Others have seen more pairs and more family parties than I have. Mr. Robert Chill, of Shinnelwood, in the parish of Tynron has given me the following note from his diary. "September 23rd, 1944. Saw a flock of about a hundred Siskins on trees near the garden and later near the house. A great many seen in thirties or more at present, many of them young birds." These notes only refer to one parish, and I cannot tell to what extent these increased numbers are found elsewhere.

J. M. McWILLIAM.

GAIT OF CORN-BUNTING.

ON August 25th, 1945, I was watching birds from my car on the road through the Oxford sewage farm when several Corn-Buntings (*Emberiza calandra*) alighted on the road just in front of the car and ran swiftly, like mice, into the vegetation growing alongside.

It is well known, as recorded in *The Handbook*, that the normal gait of the Snow-Bunting (*Plectrophenax nivalis*) and the Lapland Bunting (*Calcarius lapponicus*) is a quick run. I have several times seen the Reed-Bunting (*Emberiza schoeniclus*) run on the ground and *The Handbook* says, "On ground hops briskly, but will also walk or run like Snow-Bunting." But of the Corn-Bunting it says, "On ground hops," so it would appear that this species has not previously been recorded as running.

Is it possible that all buntings run when on really smooth ground like a road surface?

W. B. ALEXANDER.

LARGE CLUTCHES OF SKY-LARK, MEADOW-PIPIT AND YELLOW BUNTING.

ON Rockcliffe Marsh, Cumberland, on May 19th, 1937, a Sky-Lark (*Alauda a. arvensis*) was flushed from a nest containing six eggs and one newly-hatched young and on June 19th, 1945, in a wheat-field

near Dalston, Cumberland, a Sky-Lark was flushed from a nest with six partly-fledged young.

A Meadow-Pipit (*Anthus pratensis*) was flushed from six eggs on June 9th, 1924, in a nest situated at two thousand feet altitude on the High Street fells. Another, flushed from six eggs on May 14th, 1939, in a nest situated at three hundred feet altitude on the fringe of the Skiddaw fells, trailed along the ground with fluttering wings.

On June 14th, 1930, a Yellow Bunting (*Emberiza c. citrinella*) was flushed from six eggs in a nest in a gorse-bush at Cumdivock, Cumberland.

The Handbook states that six or seven clutches of Sky-Lark and sixes of Yellow Bunting occur very rarely and sixes of Meadow-Pipit "seldom in British Isles." R. H. BROWN.

HOUSE-MARTINS DRIVING OFF HOUSE-SPARROW FROM THEIR NEST.

MR. J. V. Taylor (*antea*, Vol. xxxviii, p. 318), says that the House-Martin (*Delichon u. urbica*) apparently does not resist attacks on its nest by the House-Sparrow (*Passer d. domesticus*). In 1945 a pair of martins built a nest on my house at North Bersted, Bognor Regis, Sussex, and reared a brood successfully, all the young being fledged by August 2nd. On July 16th, when the young martins were ten to eleven days old, I saw a male sparrow deliberately attempt to enter the nest. It made several unsuccessful attempts to enter at intervals for about half an hour, the parent martins meanwhile hovering about in great agitation. At the end of that time, the sparrow succeeded in knocking off a small fragment of the nest. Immediately, one of the parent martins flew at the sparrow, which made off, chased by the martin. A few seconds later, the parent martin returned and both birds continued to feed the young in the normal way. Neither this sparrow, nor any other, again molested the nest to my knowledge. I was completely hidden from the view of any of the birds. S. J. TEIDEMAN.

EMIGRATION OF SWIFTS DURING JULY.

As there is still doubt as to whether the Swift (*Apus a. apus*) regularly starts emigration from our coasts early in July, I am placing on record the following notes which I consider settle the matter. I was living at Dungeness, Kent, during July 1937-40, and I kept a constant watch. The following records are from extensive notes taken at the time.

1937.—On July 4th, when the wind was S.W., force 7, I saw 20 in seven groups, start off across the sea from the Point, going S.E. or E.S.E. They varied a good deal as to how much way they could make against the wind. Most of them were facing the wind exactly, and going at a right angle to it, but some were being blown back somewhat.

On July 5th, when the wind was W, force 1, at 7 a.m., about 50 were gliding in circles, getting higher, and being blown E. until they were out of sight. By 10.50 a.m., the wind was W.S.W., force 3. During the morning twelve were seen starting off across the sea to the S.E. or S. On July 7th, the wind S.W., force 4, a scattered group of 25 went out to sea to the S.

On July 10th (wind W, force 7) about 150 were seen during the morning. Some went out to sea S. or E.S.E. facing the wind; others went along the coast W. Of the remaining twenty-four days of the month, Swifts were seen to start off on eight of them.

1938.—On July 8th (wind S., force 7) about 150 were seen to start off across the Channel; on five days during the rest of the month some did so.

1939.—On July 5th (wind S., 12 m.p.h.) 3 set out at about 7 a.m. going S., E.S.E. and S.S.E. On twelve of the remaining days of the month, some were seen to go in any direction between S. and W.S.W.

1940.—July 6th (wind S.W., 10 m.p.h.) 3 Swifts went S. from about 300 yards from the Point.

July 8th, at 6.15 a.m. (wind N.W., 5 m.p.h.), 3 were hawking about near the Point and lighthouse; went N. when they got to the sea. By 10.34 the wind had changed to S.W., 12 m.p.h. At 10.55, 6 or 7 came from N.E., and went out to sea S.S.W.

As in the case of the other years, the departure of the Swifts until they had all gone, depended entirely on the direction of the wind. If it was at all from S. (as it was on 10 days to July 31st, 1940), some went out to sea; if from W. some went off W.S.W., others along the coast-line W.; if at all northerly, no attempt was made to go to sea, some remaining hawking about.

One must add to these records, two Swifts seen on June 6th, 1938, going across S. facing a S.S.W. force 3 wind.

Although groups of Swifts, from widely separated nesting places, collect together on some evenings at Dungeness, there are sometimes far too many for them to be only local nesting birds. Mr. T. C. Gregory has told me that on the evening of July 10th, 1937, he saw 200 to 300 hawking about the "Swift collecting ground at Deal." He saw as many again on July 21st. They appeared to be occasionally joined by birds migrating down the coast. It seems probable that these July emigrants are non-breeding birds of the year before.

N. H. Joy.

GREAT SHEARWATERS IN THE ENGLISH CHANNEL.

IN *British Birds* of February, 1940 (Vol. xxxiii, pp. 248-250), the late Editor discussed Mr. V. C. Wynne-Edwards's recently published suggestion that recorded occurrences of the Great Shearwater (*Puffinus gravis*) in the English Channel might have referred to *P. kuhlii*. Mr. Witherby showed that the evidence for the correct identification of *P. gravis* was quite conclusive in most cases, but that up to that time there were very few satisfactory identifications

of *P. kuhlii* in the Channel. I added a note (p. 284) confirming this general conclusion from observations made in the Bay of Biscay and the Channel in September, 1911.

On the morning of August 30th, 1945, I identified both species from a boat that was at that time some miles south of Cornwall, on the way from New York to Southampton. At 9.15 a.m. (soon after the Scilly Isles had been sighted), I saw three shearwaters, all *P. kuhlii*. Between 10 and 11 a.m., I saw about twenty shearwaters in all, most of them solitary birds; of these I identified seven or eight as *kuhlii*, three as *gravis*, and four as *puffinus*. The rest were either *kuhlii* or *gravis*, but were too far off to identify. From 11 a.m. till after noon we were in banks of fog, and I could see no birds. From 1 to 2 p.m., I was on the watch, and saw various other sea-birds, but no shearwater. Soon after 2 p.m., we sighted the south Devon coast.

It may be worth adding that four days earlier (August 26th), when we were nearly half way across the Atlantic, almost due east of New York (security conditions still prevailed, so exact latitude and longitude could not be obtained), I saw numbers of *P. gravis* together with some *P. kuhlii*. On August 27th, I only saw petrels; on August 28th I was not observing, but I was assured that no birds were seen; on August 29th I saw two *P. kuhlii* together about 6 p.m.

There is perhaps slight evidence that *P. gravis* was the only large shearwater regularly visiting the western Channel formerly, but that in recent years *P. kuhlii* has begun to visit these waters also in the autumn. The two species are readily identifiable if a side-view can be obtained. If they persist in flying away from the ship, identification is difficult.

H. G. ALEXANDER.

EARLIEST KNOWN BRITISH OCCURRENCE OF NORTH ATLANTIC SHEARWATER.

A RE-EXAMINATION of the mounted birds in Tring Museum has led to an interesting and important discovery. A specimen was found, the original label of which bears the following: "Great Shearwater ♀ Washed ashore alive at Dungeness, Kent, Jan. 21, 1901, R. Johnson." The inscription on the Rothschild label runs thus: "Washed ashore 21/1/1901, Dungeness, Kent, ♀" but no name is given. The bird is now labelled:—*Puffinus kuhlii borealis*, British Mus. Reg. 1939.12.9.3616.

The specimen had been referred to the Great Shearwater (*Puffinus gravis*), but a careful comparison with specimens shows that this identification was wrong. The bird is undoubtedly a North Atlantic Shearwater. The length of the wing, 364 mm. and the deeper and thicker bill demonstrate that the bird is not referable to the Mediterranean Shearwater (*Puffinus k. kuhlii*). It should be borne in mind that British occurrences of this species are much more likely to be *borealis* than *kuhlii*. The description of the original label is probably responsible for this bird having been deprived of

its rightful position in ornithology for forty-four years. I cannot find that a record of this occurrence has been previously published, nor can I trace anything further regarding the history of the specimen. The bird is mounted and is in good condition.

The Tring bird is the first British example of the species *Puffinus kuhlii*. Previously the earliest record for the species was the only example of the typical form, *P. k. kuhlii*, a bird picked up on Pevensey Beach, Sussex, on February 21st, 1906. There is only one other fully authenticated occurrence of *P. k. borealis*, a male picked up at West St. Leonards, Sussex, on March 14th, 1914. There is a similarity between these three records, as in each case the birds were picked up and at no great distance from each other. There is a further similarity between the two records of *P. k. borealis*, for the St. Leonards bird was first recorded as a Great Shearwater (*Puffinus gravis*) (*antea*, Vol. vii, p. 324), and it was nearly two years later that the identification was corrected by Mr. J. B. Nichols (*antea*, Vol. ix, pp. 203-4).

Mr. J. E. Dandy, of the Tring Museum, is entirely responsible for the resurrection of this bird and he must be congratulated on his important discovery.

WILLIAM E. GLEGG.

WOOD-SANDPIPER FEEDING ON OPEN SHORE.

ON August 27th, 1945, we saw a Wood-Sandpiper (*Tringa glareola*) feeding and resting with a mixed flock of waders on the mud of the open shore, on Sheppey, Kent. When the flock rose the Wood-Sandpiper also flew and separated from the flock, but rejoined them again when they alighted. In *The Handbook*, it is stated that the Wood-Sandpiper very seldom occurs on the open shore.

T. BISPHAM AND R. H. RYALL.

WOOD-SANDPIPER IN WESTMORLAND.

ON August 30th, 1945, I twice flushed a Wood-Sandpiper at Penrith Sewage Farm, Brougham, Westmorland. The bird was well seen and gave characteristic calls on both occasions. On the second occasion it gave an especially long sequence of calls as it flew off fast and far. I have had previous experience of this species on Darlington Sewage Farm and in the Camargue.

The Birds of Lakeland (1943) states that all records from its area refer to Cumberland.

M. G. ROBINSON.

LITTLE RINGED PLOVER IN WARWICKSHIRE.

ON May 22nd, 1945, in a large, partially flooded sand and gravel quarry near Coventry, my attention was attracted by a bird I at first took to be a Ringed Plover (*Charadrius h. hiaticula*). On approaching to about 30 feet I was able to discern, in perfect light and with the aid of 8 x 30 mm. binoculars, the following points, from which I conclude that the bird was definitely a Little Ringed Plover (*Ch. dubius curonicus*) : legs flesh-coloured, appearing thinner and less conspicuous than those of a Ringed Plover ; upper-parts light sandy brown, having a somewhat mottled appearance ; bill

black, appearing rather tapered and definitely lacking the conspicuous orange marking of the Ringed Plover; whole appearance less stocky than Ringed Plover, giving the appearance of a relatively longer tail.

After having had the bird under observation for nearly half an hour, during which it continued to run about feeding at the water's edge, I put it up. The absence of any wing-bar and the call-note, a clear, almost monosyllabic, high-pitched "teeu", thrice repeated, were most distinctly noted.

The particulars quoted I took on the spot before I had access to a text-book. A point mentioned in *The Handbook* which I did not notice was the yellow orbital ring. I am quite familiar with the Ringed Plover.

A search of the quarry and also of an adjacent one revealed no evidence of breeding and the bird was not seen again.

R. W. M. LEE.

[The yellow orbital ring is not invariably conspicuous and if the bird was in its first summer, as the somewhat mottled appearance of the upper-parts suggests, it may well have been rather dull. The other particulars appear quite conclusive.—EDS.]

SHARE OF SEXES IN INCUBATION IN KENTISH PLOVER.

(See plate 10).

IN *The Handbook of British Birds*, Vol. iv, p. 361, it is stated with reference to the Kentish Plover (*Leucopolius alexandrinus*): "Incubation.—By both sexes: incubation-patches present in male and female."

So it seems that field-observations are inadequate on this point, at least in Great Britain. In Holland I have watched and photographed both sexes of the Kentish Plover on the nest, which can be easily ascertained, as in this species the male and female can be distinguished at first sight, as is clear from the accompanying photographs, which were taken at two different nests at Makkum, Prov. Friesland, Holland.

On the other hand I believe that the female takes most part in incubating, as in my experience I most frequently found the female sitting on the eggs, which is in accord with the observations of Schenk in Hungary (*Beitr. Fortpfl.-biol. Vög.*, 1928, p. 161).

FR. HAVERSCHMIDT.

[The change-over on the nest has been recorded by Walpole-Bond (*B. of Sussex*, Vol. iii, p. 137).—EDS.].

FLOCKING OF GOLDEN PLOVER.

WRITING of the Golden Plover (*Pluvialis apricaria*), the Rev. H. A. Macpherson, in his *Fauna of Lakeland* (1892, p. 358), states "it is surprising how early the Golden Plovers bred on our hills, descend to the estuaries," and gives records of flocks in the Solway Firth area from early July onwards. The birds still keep their early

time-table : for example on June 30th, 1945, there were at least one hundred and fifty birds on Rockcliffe Marsh, with smaller flocks present on July 5th, 1944, and July 6th, 1942. Another early date is July 4th, 1930, when fifty to sixty birds were present. From July onwards the birds frequent the salt-marshes or shingle-covered mudflats and sandflats or mussel-scaurs or seaweed-tangled rocks, either by themselves or in the company of other waders. On December 24th, 1934, at least one thousand Golden Plovers were assembled, in company with several thousand Lapwings (*Vanellus vanellus*), on a stretch of pebbly sand and mudflats ; again on December 29th, 1936, over four hundred birds were on a stretch of foreshore covered with large pebbles and small rocks ; many more instances could be given of flocking on the shore between July and February.

Birds have been seen in their breeding-areas on the Lake District fells as late as October 24th, 1937. On the Pennine fells on December 22nd, 1934, a flock of thirty-five birds was found feeding amongst peaty-bog ground at an altitude of 2,200 feet, and at dusk on the same day another party of twelve birds, when disturbed amongst short grass at 1,500 feet altitude, flew higher up the fell. Birds were flushed on February 3rd, 1929, at 1,000 feet altitude on the Pennine fells and at 2,500 feet altitude on March 3rd, 1929, although on both dates the ground was hard frozen, with the streams frozen over.

As the birds fly overhead, in V-formation, on a mild day in autumn or winter odd birds will utter part of the breeding-song, accompanied with a slow-motion flight : then detaching themselves from the rest of the flock will dive earthwards at great speed, recover within a few feet of the ground and skim along with zigzag flight, then shoot skywards again. These actions have been seen amongst the flocks frequenting the shore or inland grassfields in most years during mild balmy weather and clearly indicate that the breeding-impulse is never very latent.

R. H. BROWN.

"INJURY-FEIGNING" OF OYSTER-CATCHER.

The Handbook of British Birds (Supplementary Additions and Corrections, Vol. v, p. 303), records "injury-feigning" by the Oyster-catcher (*Hæmatopus ostralegus*) as common in the Faeroes on the authority of K. Williamson, but mentions no other records. On June 20th, 1945, being on the coast near Hallum, Prov. Friesland, Holland, I came across a pair of Oyster-catchers which according to their behaviour had young, as both birds kept flying around me crying loudly. I sat down to watch them and suddenly saw a downy chick walking through the short grass. When I picked it up in order to ring it, one of the adult birds settled on the ground, where it lay prostrate with slowly beating wings. It continued to behave in this way as long as I remained on the spot with the chick in my hands, but as soon as I walked in its direction it crept over the ground with slowly beating wings. It was only this

particular bird which showed this interesting example of "injury-feigning," which I never before observed in this species. There is, however, a note on the "injury-feigning" of an Oyster-catcher on Norderoog, one of the Northern Frisian Islands, in *Orn. Monatsschrift*, 1931, p. 43.

FR. HAVERSCHMIDT.

WE note from *The Handbook* that there is apparently no British record of the Oyster-catcher (*Haematopus ostralegus occidentalis*) "injury-feigning" and so we put the following incident on record.

On August 1st, 1941, while walking along the marsh bordering the Wampool estuary in Moricambe Bay, Cumberland, a pair of Oyster-catchers started to circle round us "keeping" loudly and much excited. We marked a young bird crouching against a clump of grass and walked towards it. At once one of the parent birds (sex ?) fluttered on to the sand within five yards of us, trailing as if broken-winged and crying with a lower and more plaintive note. Deliberately we allowed ourselves to be lured away towards it. When we were within a couple of yards, the bird rose and flew away in normal fashion. We again turned towards the young bird and the same performance was repeated by the parent, but this time we made as if to catch it. The bird flew away, alighted on the sand, and again performed the broken-wing trick. We followed the bird for some distance and when forty to fifty yards from the young bird, the parent flew away and joined its mate, who had been circling round the whole time. At no time did we note anything which might reasonably be called "aggressive display."

Jim Storey, the well-known Solway wildfowler and keen bird observer, has noted the same "injury-feigning" display by the Oyster-catcher on several occasions, but states that it is not general, some few pairs being more excited when they have young than others. NORMAN F. ELLISON AND TOM L. JOHNSTON.

The "injury-feigning" habits of the Oyster-catcher (*Haematopus ostralegus occidentalis*) have been seen on three occasions on the salt-marshes of Cumberland. On June 6th, 1935, one bird of a pair that had newly-hatched young on a marsh crept along the ground with humped back and earthward-pointing bill, whilst at times it lay motionless on the ground, with wings drooped to disclose the white rump. Also at times it pretended to brood young where none existed. In the case of a pair that had three young still in the nest hollow on June 10th, 1939, both birds flew around with slow-motion flight, piping noisily: presently one alighted on the marsh and drooped its wings to show the white rump, then crept along the ground with white rump displayed. On July 16th, 1939, both birds of a pair with young flew with slow-motion flight just above the ground, piping noisily, then alighted on the marsh to creep along the ground with backs humped and tails depressed, wings arched and depressed from the carpal joints, wing-tips touching the ground, and wings used almost as a lever. At times a bird would squat on the ground and spread out both wings to reveal the white rump.

R. H. BROWN.

BEHAVIOUR OF LITTLE GULL.

ON October 22nd, 1945, I watched an immature Little Gull (*Larus minutus*), at the Staines Reservoir, Middlesex. I had the bird under observation for 2-3 hours intermittently, and during this period it was in the air almost continuously. It was hawking for insects rather in the manner of a Black Tern, but frequently it would fly low over the water or exposed mud and patter along for several steps over the surface before rising again. Even when it did alight, it normally kept the wings open and held horizontally, rising again after a few seconds. Only on two or three occasions did I see it actually settle and fold its wings. Even then it rose again after a few minutes.

There is no mention in *The Handbook* of this patterning over mud or water. I assume that its prey was too high to obtain from the ground or water level and too low for normal flight. T. BISPHAM.

COMMON GULLS NESTING ON BIRCH TREES.

IN June, 1945, during a period of leave spent on Upper Deeside (Aberdeenshire), I noted on several occasions Common Gulls (*Larus c. canus*), perching on trees near the rivers Dee and Clunie. On June 7th, my attention was attracted by one of a pair perched on the branch of a birch tree on the fringe of a small wood near Braemar, and on approaching, I saw that the second bird was sitting on a nest built lower down in the same tree. The nest, which was made of grass, contained three eggs and was built about fourteen feet from the ground in the ledge formed at the site of fracture of the main trunk of the tree, which had snapped off and, although still partially united, had fallen so that the upper branches now rested on the ground.

About a hundred yards away I found another nest, also containing three eggs, about twelve feet from the ground in a similar situation in a broken birch tree. Again, one bird was incubating, while the second perched above the nest on the horizontal part of a branch still growing from the main trunk.

I have not a copy of *The Handbook* available, but I believe that the Common Gull has not previously been recorded as nesting in trees in the British Isles. IAN D. PENNIE.

[It appears to be correct that there is no other British record of nests built in or on trees, though breeding in Rooks' nests has been recorded in Scotland.—EDS.].

GREAT SKUA OFF KENT AND ESSEX.

ON August 14th, 1945, two of us (W.A.W., T.B.), saw a Great Skua (*Stercorarius s. skua*) flying steadily south off the Isle of Grain, Kent. On August 26th, a Great Skua was seen off Cliffe, Kent, by R.H.R. and T.B. After flying over to the Essex side of the Thames, it was seen harrying Common Gulls and later resting on the water. T. BISPHAM, R. H. RYALL AND W. A. WRIGHT.

EARLY NESTING IN 1945.—We received an unusual number of records of early breeding in the spring of 1945 which have been held over owing to pressure on our space.

The following are the most noteworthy as regards resident birds :—

CARRION CROW (*Corvus c. corone*) and MAGPIE (*Pica p. pica*).—Reports from Wales and the Western Midlands indicate exceptionally early breeding, laying beginning in a number of cases in late March or the first few days of April. Mr. A. W. Bolt reports a crow's nest containing a full clutch of eggs in Radnorshire on March 26th.

JACKDAW (*Corvus monedula spermologus*).—A full clutch in Radnorshire on April 8th (Bolt).

BULLFINCH (*Pyrrhula p. nesa*).—Several April records for Bishopstone, Herefordshire—one egg, April 25th; one egg, April 27th; five and four eggs, April 30th (Hon. G. L. Charteris).

CHAFFINCH (*Fringilla cælebs gentilis*).—Nest at Bishopstone apparently completed March 26th; revisited after absence on April 18th, when it contained young about 5 days old (Charteris).

GREAT SPOTTED WOODPECKER (*Dryobates major anglicus*).—A young bird which had probably left the nest a day or two before being fully fledged, as it was barely able to fly, was seen near Chislehurst on June 2nd (F. J. Holroyde) which indicates that breeding must have commenced not later than April 30th.

BLACK-NECKED GREBE (*Podiceps n. nigricollis*).—A nest in Cheshire, contained at least two eggs on April 17th (A. W. Boyd). According to *The Handbook* most nests in the British Isles are recorded in the second half of May or June.

Mr. Charteris also reports early nests of Greenfinch, Linnet, Yellow Bunting and Moorhen, at Bishopstone; on the other hand Long-tailed Tit, Mistle-Thrush, Song-Thrush, Blackbird, Robin, and Hedge-Sparrow in the same district appeared not to be exceptionally early.

For summer migrants the most important records are the following :—

WILLOW-WARBLER (*Phylloscopus t. trochilus*).—A number reported. Mr. Charteris found two nests being built at Bishopstone on April 19th and five others on the 23rd, and ascertained in the case of two nests that incubation began in April. He found that on an average the Chiffchaffs (*Phylloscopus c. collybita*) in this district were about level with the Willow-Warblers as regards dates, an unusual state of affairs. Mr. P. A. Adolph records a complete clutch of seven eggs at Tunbridge Wells on May 1st and many young fledged from other nests round about May 23rd. Other records are: one egg in nest at Monk Okehampton, Devon, on April 30th, the clutch hatching on May 18th; nest with seven eggs, same district, May 6th; all hatched on 15th (R. G. Gordon); nest with four eggs at Blackford Hill, South Edinburgh, May 3rd; clutch of seven complete on May 8th and incubation in progress, young leaving nest in first week of June (J. H. Drummond).

WOOD-WARBLER (*Phylloscopus sibilatrix*).—Complete clutch of seven eggs at Tunbridge Wells on May 4th. On the other hand five other pairs had not complete clutches until about May 18th (Adolph).

GARDEN-WARBLER (*Sylvia borin*).—Probably the most remarkable record received is that of a Garden-Warbler found by Lieut.-Col. F. E. D. Drake-Briscoe near Norwich, sitting on five eggs on April 25th. It "feigned injury" when disturbed and returned to the nest in a few minutes. Almost as remarkable is the case of a nest found by Mr. Adolph at Tunbridge Wells on May 7th with two eggs, which had hatched on May 9th. This would indicate the beginning of incubation on approximately April 27th. Both sexes were seen and positively identified. Also a nest found at Monk Okehampton on May 7th with five eggs, which had all hatched on May 15th (Gordon).

BLACKCAP (*Sylvia a. atricapilla*).—A remarkable record is that of a nest found with a complete clutch of four eggs at Tunbridge Wells on April 15th

(Adolph); this nest was found because the male sang a phrase of song whilst sitting. At Bishopstone, as in 1943, incubation beginning at the end of April seemed general; in two cases it began on April 27th (Charteris). A nest found at Monk Okehampton on May 17th contained young estimated to be five days old (Gordon).

WHITETHROAT (*Sylvia c. communis*).—Nest with two eggs at Bishopstone, May 1st, others with two, four, and five eggs respectively on May 3rd; brood about a week old on May 17th (Charteris).

REDSTART (*Phoenicurus ph. phoenicurus*).—Two broods seen out of the nest at Bishopstone on May 30th, which would indicate clutches completed not later than May 1st. Also nest with two eggs, May 6th, and another with young, May 22nd (Charteris).

NIGHTINGALE (*Luscinia m. megarhyncha*).—Nest containing four young, just hatched, examined near Taunton on May 13th (Major G. E. Took). The clutch must therefore have been completed not later than May 1st.

FINCHES AND OTHER PASSERINES HOVERING.—The records of Bullfinches hovering when feeding published in Vol. xxxviii, pp. 94, 154, 253, which seem to show that this species is particularly prone to such behaviour, have brought us letters from several observers mentioning occasional hovering in other species. There is no doubt that a good many small birds in which this is not a normal habit are quite capable of hovering for short spells on occasions. We have certainly observed it in House-Sparrows (*Passer d. domesticus*) and Mr. F. J. Holroyde reports having done so on several occasions, the birds being apparently engaged in picking aphides off the undersides of leaves. Mr. M. D. England informs us of a pair of Tree-Sparrows (*Passer m. montanus*) at Aston Clinton, Buckinghamshire, which regularly hovered in order to feed their young when the latter were old enough to appear at the nest hole, and Mr. C. J. Stevens records a male Chaffinch (*Fringilla coelebs gengleri*) in Cornwall hovering over an elder tree to catch insects flying in the air above it. Mr. G. O. Shuffrey also reports Chaffinches hovering to take flies over the Wye, at Monmouth. Amongst other birds than finches and sparrows we have records from Mr. England of a Song-Thrush (*Turdus e. ericetorum*) at Limpsfield, Surrey, hovering in order to pick inaccessible yew berries and a cock Redstart (*Phoenicurus ph. phoenicurus*) at Glenridding, Ullswater, which repeatedly hovered for considerable periods while waiting for the hen to emerge from a nest in a tree stump in which young were being fed. Mr. Holroyde also mentions a Garden-Warbler (*Sylvia borin*) which made efforts at hovering, not very successfully, in order to take aphides from bramble leaves only a few inches from the ground, but in this case the bird only sustained itself for one peck at a time, in contrast to the sparrows, which did so for as many as five or six pecks.

EARLY FIELDFARES.—Since we published notes on Fieldfares (*Turdus pilaris*) in Warwickshire on August 12th and in Essex on September 8th (*antea*, Vol. xxxviii, pp. 26 and 236) we have received other records for the period before September 23rd, treated as "early" in *The Handbook*. These are:—a flock at Orford, Suffolk, August 23rd, 1945 (Arthur Baker); five or six, Willerby, East

Yorkshire, September 10th, 1944 (F. R. Pearson); two, Stagsden, Bedfordshire, September 11th, 1945 (H. A. S. Key); thirty, Kinloss, Morayshire, September 13th, 1942; three, Bishop Auckland, Co. Durham, September 17th 1939 (P. A. Humble). The following records for the period in question have also appeared in local Reports for 1944:—fifteen to twenty, Keythorpe, near Sheffington, Leics., August 17th, and ten, Wistow Park, near Great Glen, August 26th (Leics. and Rutland Report); small flock near Dallington, Sussex, August 23rd (*Hastings and E. Sussex Naturalist*); fourteen near Sheffield, September 9th (Yorks. Report). Regular arrivals begin in the last week of September and anything before the beginning of this week was treated as early in *The Handbook*. It would probably be a desirable amendment to state “arrivals in the two middle weeks of September fairly frequent” and to reckon as really early only arrivals before September 7th.

DRUMMING OF GREAT SPOTTED WOODPECKER IN OCTOBER.—We are informed by Mr. C. W. Towler that on October 15th, 1944, he heard a Great Spotted Woodpecker (*Dryobates major anglicus*) drumming near Biggleswade, Bedfordshire, and subsequently saw the bird. This and other records recently received (*antea*, Vol. xxxvii, pp. 160, 178, 218) referring to the dates October 7th and 11th, November 28th, December 1st and 4th, seem to establish that a slight recrudescence of drumming in autumn and early winter, a period left blank in Mr. H. G. Alexander's table reproduced in *The Handbook*, is not very rare.

HAWFINCH AS PREY OF SPARROW-HAWK.—Mr. K. R. Chandler has forwarded us the lower mandible of a Hawfinch (*Coccothraustes c. coccothraustes*) found amongst food-remains in the nest of a Sparrow-Hawk (*Accipiter n. nisus*) in Surrey, on August 26th, 1945. This species is not recorded in the list of prey of the Sparrow-Hawk in *The Handbook*.

OSPREYS ON LOCH NESS.—Dr. A. G. Bull informs us that on April 24th, 1945, he and his son had a close view of an Osprey (*Pandion h. haliaetus*) on Loch Ness. Later in the day they saw two birds soaring high above the middle of the Loch. There appears to be no definite evidence that they were other than passage migrants, though we understand that Ospreys were again reported on Loch Ness in August.

MUTE SWAN NESTING IN MARCH.—Referring to a note by Mr. Irwin (*antea*, Vol. xxxviii, p. 136) of a Swan (*Cygnus olor*) incubating a clutch of six eggs on March 26th, Mr. Peter R. Knipe informs us that he observed a Mute Swan sitting on a nest with eggs by the Grand Union Canal at Rickmansworth, Hertfordshire, on March 14th, 1943, and March 18th, 1944. We think the *Handbook* description of the breeding-season, “second half of April, exceptionally rather earlier,” somewhat exaggerates the rarity of nests in March and the beginning of April.

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ASSISTED BY

NORMAN F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

AND A. W. BOYD, M.C., M.A., F.Z.S., M.B.O.U.

CONTENTS OF NUMBER 3, VOL. XXXIX, MARCH 1, 1946.

	PAGE.
The Recording of Incubation and Fledging Periods. By R. E. Moreau	66
Black Terns breeding in Sussex. By R. Cooke	71
Fertility and Mortality in the nest of Swallows. By E. J. M. Buxton	73
Lesser White-fronted Geese on the Severn. By H. H. Davis and Peter Scott ...	77
Studies of some species rarely photographed. II. The Lesser White-fronted Goose. Photographed by Peter Scott and Gavin Maxwell	80
Obituary :—	
Charles Bethune Moffat	81
Notes :—	
Spring migration across the Irish Sea (H. G. Alexander)	83
Raven's nest in October (J. H. Hyatt)	83
"Anting" of Starling (C. F. Tebbutt)	84
Observations at a Greenfinch's nest (N. M. Hepworth)	84
Nesting of Wood-Lark in North Yorkshire (E. M. Rutter)	85
Aggressive behaviour of Blue Tits in winter (I. Kimbrey)	86
Effect of snow on nesting of Chiffchaff (P. A. Adolph)	86
Sedge- and Reed-Warblers collecting food outside their territories (David Lack) ...	87
Mistle-Thrushes nesting in Inner London (Sylvia Lloyd)	87
Courtship feeding of Mistle-Thrush (A. W. Boyd)	88
Courtship feeding in thrushes and warblers (B. W. Tucker)	88
Iceland Redwing in Lancashire (Arthur Welch)	89
Great Spotted Woodpecker killed by Grey Squirrel (William E. Glegg) ...	90
Barn-Owl roosting in conifer (D. R. Anderson)	90
Spoonbill in Gloucestershire (R. E. Alley)	90
Glossy Ibis in Norfolk (P. R. Westall)	91
Ferruginous Duck in Norfolk (Michael J. Seago)	91
"Injury Feigning" of Wood-Pigeons (R. R. Chandler)	92
Spotted Redshanks in Co. Mayo (Robert F. Rutledge)	92
Dotterel in Northamptonshire (R. E. Burton)	93
Pratincole on Lundy (F. W. Gade)	93
Sandwich Tern in Somerset in December (Stanley Lewis)	93
Great Skua on Norfolk-Suffolk coast (C. F. Tebbutt)	94
Short Notes :—	
Waxwings in Great Britain in 1944. Late Whitethroat in Bedfordshire. Spoonbill in Suffolk. Grey Phalarope in Somerset	94
Reviews :—	
<i>Somersetshire Arch. & Nat. Hist. Soc.: Ornithological Section. Report on Somerset Birds, 1944</i>	95
<i>Ornithological Record for Derbyshire, 1944</i>	95
<i>British Trust for Ornithology: Eleventh Report for the year 1944</i>	95
Letters :—	
Robin feeding young Song-Thrushes (D. J. May)	96
Bird Observatories in the British Isles (W. B. Alexander)	96

THE RECORDING OF INCUBATION AND FLEDGING PERIODS

BY

R. E. MOREAU.

RYVES's papers in *British Birds*, Vol. xxxvii, pp. 10-16, 42-49 and 151-154, and recent discussion with Mr. W. B. Alexander and Mr. B. W. Tucker have made it clear that some further consideration is desirable of the manner in which incubation and fledging periods are calculated and recorded. Such periods are frequently cited incidentally as, for example, "incubation period 13 days" or "about 13 days", or "fledging period 20-22 days". But the basis on which such figures are arrived at is rarely stated, and there is no generally accepted standard with defined beginning and end points for the periods. Consequently it is always uncertain how far the various statements of incubation and fledging periods that are scattered through the literature are really comparable, studies that need an accurate arithmetical basis are precluded, and the compilers of such a work of reference as *The Handbook of British Birds* lack thoroughly satisfactory material for specific generalizations.

The difficulties of standardizing a basis for calculating incubation and fledging periods are admittedly great. Some were referred to by Bletchly in 1938 (*Brit. Birds*, Vol. xxxii, pp. 8-12). Moreau and Moreau (*Auk*, Vol. lvii, pp. 313-325, 1940) * made some practical suggestions, while stressing the variation in "fledging" behaviour between species even of nidicolous birds, and the variation, both specific and individual, when incubation is starting. Ryves (*Brit. Birds*, Vol. xxxvii, pp. 42-49) has given some extreme cases of individual variation, and made suggestions about "fledging periods" (*ibid.*, 151-154) evidently in ignorance of the Moreaus' contribution.

It may be accepted as a starting point of the discussion that any standardization of the basis of calculating the periods should have regard firstly of the physiological basis of "incubation" and "fledging", and secondly, but actually more importantly, of what is practicable. Physiologically the start of incubation means either, considering the egg, the moment when cell-division begins, or, considering the parent, the time when it begins to sit. For our present purpose the start of cell-division is practically irrelevant, because it is not directly ascertainable. Moreover Tucker informs me that in the fowl and pigeon it has been shown that cell-division

* As indicated in the belated correction in *Auk*, Vol. lx., p. 608 (1943), the paragraph beginning "December 2" should be deleted. It appeared in the original owing to an error for which the authors were not responsible.

begins in the oviduct and that an egg not laid by the late afternoon may be retained with continuing cell-division until the next day. Here we have at the outset a cause of variation in the time that eggs need to be incubated in the nest, even by parents of equal incubating efficiency ; and the observations on fowls and pigeons are likely to be widely applicable.

The artificial hatching of eggs in the laboratory can provide a useful indication of the incubation period of a species—and the method has been used for a number of birds, especially by the Heinroths—but we should have to wait a long time before eggs of more than a small fraction of the bird species of the world could be subjected to experimental study in this way. In any case, results so obtained could not be accepted as final, only as supplementary to field data, because the temperature at which each species' eggs should be kept would need to be ascertained and the variations in temperature and humidity to which an egg is subjected in the nest are not reproduced in an incubator.

It is well-known that most species complete their clutch before they begin to incubate, while others, such as owls and hornbills, begin to incubate with the first or second egg. But it has also been established that in species of the first category some birds start either directly after, or even before, the last egg of the clutch has been laid, to brood with as much assiduity as they will display at any stage of the incubation, while others will work up to "normal" assiduity only gradually, over a period of a day or two after the completion of the clutch. Especially in such cases as these last it is impossible, even by intensive watching, to select any precise point at which the incubation can be said to start.

Therefore I adhere to the suggestion made by Moreau and Moreau (*ibid.*) that for practical purposes—and admittedly as an expedient—the incubation period should as a rule be counted from the laying of the last egg, the exceptions being those cases in which incubation is known to start earlier and which could be specified by the recorder.

Frequently, and probably as a rule, the eggs comprising a clutch do not hatch together. Where the intervals between them are appreciable it is clearly misleading to use, in recording the incubation period of the clutch concerned, only the period between the laying of the last egg and the first hatching—even if the eggs were marked. But there is another and more important and more general reason why some method of indicating a "spread" or margin of error is desirable. That is because, as was pointed out in 1940, the great majority of data on incubation (and fledging) periods are gathered by observers who can visit each nest only at intervals, usually once or twice a day. Consider as an example a case where an observer makes daily visits at 7 a.m., finds three eggs in the nest on the 1st of the month, four eggs (the complete

clutch and the female sitting) on the 2nd, all eggs present on the 13th, all hatched on the 14th. These data, derived from visits at 24-hour intervals, do not justify a definite record of the incubation period as 12 days. The last egg of the clutch might have been laid, and incubation might have started, a few minutes after the observer turned his back on the nest on the 1st of the month. Similarly, the first hatching might have taken place just after 7 a.m. on 13th, and the last just before 7 a.m. on 14th. This means that the maximum incubation period compatible with the data is (a few minutes short of) 13 days, i.e. 1st-14th, the minimum (a few minutes more than) 11 days, i.e., 2nd-13th. As Moreau and Moreau suggested, this is conveniently and accurately recorded as 12 d. \pm 1. Any "spread" in hatching can be allowed for similarly.

In calculating fledging period, allowance must be made in the first place for any spread in hatching and for any observational margin, as explained in the preceding paragraph. A real difficulty lies in deciding what shall as a general rule constitute the end of the "fledging period", which is a phrase usually used loosely. The O.E.D. ascribes to "fledge" the meaning "become fully plumed" or be "fit to fly; having the feathers developed". Probably few of us use it strictly in the first sense. We commonly use "fledging period" as equivalent to the nestling period—the period the young bird remains in the nest, which may or may not coincide with the period it takes to "become fit to fly", and hardly ever coincides with the time it takes to "become fully plumed". As pointed out in 1940, in certain species, such as some swifts and hornbills, no ambiguity is possible, because the young birds emerge from the nest fully able to fly (they have to be, or perish by falling) and apparently never return to it. In many species the young make at first a very short, often highly incompetent flight, after which they return to the nest for hours, or even a whole day. A third category consists of species, notably the African "Bulbul" (*Pycnonotus tricolor*), the young of which leave the nest when their wings can do no more than break their fall into the undergrowth below. European thrushes rather approach this type of "fledging". Then we have some difficult cases, such as the Louries (Musophagiformes), which begin to clamber about their nest tree not only days, but weeks before they can fly, and the Magpie family cited by Ryves (*antea*, Vol. xxxvii, pp. 151-154). Finally, there are the ground-nesting, fully nidifugous birds, capable of explosive dispersal, like young partridges, at an early age and, judged by size, at an early stage of development.

I adhere to the suggestion made by Moreau and Moreau, that in the majority of all bird species, which are those comprising the first two categories above, the end of the fledging period can conveniently be defined as *the occasion when a young bird first shows that its wings are capable of raising it in the air*. Ryves (*ibid.*) evidently with no knowledge of the Moreaus' discussion, has suggested that

"fledging period (as the term is generally used at present)" should be defined as "the period during which the young remain in the nest, which they finally abandon under natural conditions in various stages of development." Ryves was in fact throwing over in desperation anything like the original, or dictionary, meaning of "fledging" as "becoming fully plumed" or "fit to fly", and admittedly substituting "period in the nest". With this line I have much sympathy. I do not see how on any definition of "fully plumed" the period required to become so can be accurately ascertained in a wild bird, and in this case data obtained from captives are worthless. I should therefore myself like to see the term "fledging period" in its present sense eliminated from ornithological literature and "period in the nest" or "nestling period" substituted for it. Because that is, I feel, too much to hope for at this date, I adhere to the Moreaus' tentative definition of the end of the fledging period as given above, while stressing that the numerous cases in which the observer cannot comply with the definition should be so fully reported that comparisons may still be possible.

In practice, and when nests are not under intensive observation, fledging is usually assumed to have taken place in the interval between the occasion when advanced young are last seen in the nest and the occasion when the nest is found partly or wholly empty. There is obviously a margin for error here, unless on the second occasion the young are seen near the nest: and the observer must in any case be on the alert to reject cases where the young when last seen in the nest did not look ready to fly.

In principle, there is no reason why my definition above should not apply equally to the other categories, but in these the critical point would in practice be altogether more difficult to ascertain.

In those species the young of which normally drop from the nest and clamber for a variable period in the undergrowth, only the time of departure from the nest can normally be known. In such species there is no reason why the period between hatching and departure should not be recorded, with an explanatory note, and using the arithmetical device recommended above to show any "spread."

The category typified by the partridge remains one in which the idea of a "fledging period" seems excessively difficult.

"Spread" in the fledging of a brood needs, of course, to be allowed for no less than "spread" in hatching. Thus if the clutch hatched at intervals over 12 hours and the brood flew at intervals over 24 hours, the spread due to these causes would be \pm 18 hours.

The fact must be faced that it is "justifiable to record incubation and fledging periods without margin ('spread') only when the eggs hatch together, the young fly together, and the dates and

times are known of (a) the last egg-laying, (b) the hatching, (c) the flying". In the great majority of nest-observations these conditions are not satisfied. But incubation and fledging periods recorded as suggested above, with the "spread" and/or margins of observational error accurately defined, can give, as they are multiplied, a thoroughly sound basis for working out the average period (and standard deviation) for each species. For this it is desirable that each observer should give his nest records in detail—e.g. 3 d. \pm 1 (twice), 14 d. \pm 20 hours (once)—not confound them. The accumulation of such records would provide data not merely for specific life-histories, but also for more particular investigations, such as the possibility of differences in incubation or fledging period with locality or with time of year.

BLACK TERNS BREEDING IN SUSSEX
BY
R. COOKE.

[Attention was first drawn to the important ornithological event here recorded by its mention in a broadcast by Mr. Cooke in the "Country Magazine" programme of the B.B.C. on January 14th, 1945, and the account now given is the result of subsequent investigation by N.F.T.—EDS.]

IN 1940 the land, known as Pett Level, lying between the town of Winchelsea and the sea was flooded as part of the south coast defences. The area submerged was about a thousand acres in extent, with the ditch banks and other higher portions of ground remaining above water and forming islands. During the breeding season of 1941 some of these islands were occupied for breeding by numerous Black-headed Gulls (*Larus r. ridibundus*), Common Terns (*Sterna h. hirundo*) and other species, while at other times the area attracted large congregations of various species of ducks and waders. The most notable event of all, at least to me, was the breeding of the Black Tern (*Chlidonias n. niger*).

Nearly every spring for many years I had seen one or two on migration and so was well acquainted with them, but I never dared to hope that I might some time see their nests.

In 1941, I first saw Black Terns flying over the water during the latter half of May and when out on the flood in my flat-bottomed boat I traced them to a small island towards the landward side of the area. This island had been formed by a collection of pieces of wood, grass and other debris, driven by the wind and stranded in shallow water. This was strictly a military area and was sometimes used as a mortar range, so that my visits to this particular part had to be very limited; also I had very little spare time. On June 10th, however, I paid another visit to the island and was much elated to find eight nests, each containing three eggs on the point of hatching. I was not much surprised at this stage, as on approaching the island I could see some of what I imagined to be the male birds sitting on the gate-posts that were sticking out of the water. The old birds were fairly tame and let me get within a hundred yards or less before rising from their nests. The nests were more like real nests than those made by most Common Terns and were in fact, almost of the same style as those of the Black-headed Gull, with a good deal more lining than those of the Common Tern. The eggs did not differ very much from those of the Common Tern, except that they appeared to be somewhat darker.

As this was a critical time I did not feel inclined to stay in the vicinity of the nests very long, so after having a good look at the eggs I rowed the boat away about eighty yards from the nests and stayed for about a quarter of an hour to watch the birds. They had been flying round my head, but without appearing to be very

excited or shy, and as soon as I reached the 80 yards distance they at once returned to their nests. I then had to leave.

I returned to the site about five days later, when the young were quite strong and active, taking to the water at my approach. On this occasion I watched the old birds feeding the young. They brought to the nests all sorts of insects and other small arthropods, to some extent apparently of marine species, but they seemed to go mainly to the fresh water for their food, which included butterflies, dragon-flies and bees. Apparently the young ones were not fond of bees, for there were many dead ones lying around and on the edges of the nests.

Some three weeks later I visited the site again, when the young were flying, and from then onwards I saw them on a number of occasions until about the middle of August. The largest number seen, old and young together, was twenty-three, but there were possibly more, as I could not be sure that they were all present together at one time. Sometimes I saw a party of only eight or nine, so that at times the flock must have split up, though for the most part they kept together in a close little pack and hawked over the water very thoroughly, mainly feeding on insects, dragon-flies, &c., and never to my knowledge associated with the other terns, of which there were several hundreds present.

In 1942 five pairs returned to the same island; unfortunately I was unable to visit the nesting-site until they had hatched off, but from then onwards I had more time and was able to keep them under observation until about the middle of August. On July 29th there were seventeen, old and young, about together.

In 1943 I saw about seven Black Terns, but they only stayed a short time and I believe that their reason for forsaking the nesting-site was the hordes of Black-headed Gulls that had taken possession of almost every square foot of dry ground. Black-backed Gulls may also have played a part, as I consider that they were chiefly responsible for the disappearance of so many of the young birds in 1941 and 1942.

By February, 1944, the flooded area was dry once more, so that any further possibility of Black Terns nesting had disappeared.

FERTILITY AND MORTALITY IN THE NEST OF SWALLOWS

BY

E. J. M. BUXTON.

IN 1944, as part of a study of the breeding biology of Swallows (*Hirundo r. rustica*) nesting in the barracks occupied by British prisoners of war at Eichstätt, Bavaria, a record was kept of all nests. Birds were ringed with rings supplied by Dr. E. Stresemann so that, by catching the adult birds at roost, it was possible to determine where second broods were raised by the same pair as the first.

There were eggs laid in 19 first brood nests, and in 16 of these chicks hatched. In the other three nests the eggs were thrown out on to the floor, in at least one case after incubation had begun. The reason for this extraordinary behaviour is unknown, but I myself saw the eggs thrown out of one nest, which was just outside the door of my room, following a very noisy squabble between the owners of the nest and intruding Swallows. In the other two nests it must be assumed that the eggs were thrown out by the Swallows, since the nests were inaccessible to rats, etc. It is not possible to say whether the eggs were thrown out by the owners or by the intruders. This did not occur in any of the second brood nests, and it may be worth pointing out that in the three nests where it did occur clutches were below the average size.

Table 1 shows the figures for first brood nests.

TABLE 1.

Nest No.	No. of eggs laid.	No. of chicks hatched.	No. of chicks fledged.	Date of leaving nest.
1	6	5	5	13.7
2	4	4	4	29.6
3	4	4	3	13.7
4	3	3	3	20.7
5	5	5	4	17.7
6	5	5	4	18.7
7	3	thrown out		(8.6)
8	5	5	5	27-28.7
9	5	5	5	2-3.8
10	5	3	3	20.7
11	3	3	3	2.7
12	5	5	5	6-7.7
13	1	thrown out		(20.6)
14	5	5	5	28.7
15	5	5	5	7.7
16	1	thrown out		(?)
17	3	3	3	8.7
18	4	4	0	—
19	5	5	1	29.7
Totals	77	69	58	

The failure of nest 18 was due to some very bad weather when the chicks were part grown, which prevented the parents foraging

sufficiently, so that they were starved*. Nest 19 was built in a living room and was moved about four feet before the clutch was completed. None the less the birds returned to it, completed the clutch and hatched out all the eggs. The nest was rather fragile and fell to pieces; so that four of the chicks fell out at various dates and were killed by the fall or taken by cats. Nest 3 also collapsed and one of the chicks was killed: the others, with the remains of the nest, were put back in the same place in a butter tin. It is therefore probably best to ignore nests 3 and 19 in assessing an average from these figures, because, but for human interference, nest 19 might have been wholly successful, and nest 3 would no doubt have been a total loss.

These figures may therefore be summarized as follows:

TABLE 2.

No. of nests.	No. of eggs laid	Average.	No. of chicks hatched.	Average.	No. of chicks fledged.	Average.
17	68	4.00	60	3.53	54	3.02

For the second brood nests were re-used with the exception of No. 3, which had collapsed. Here the same pair built a new nest in the same staircase, 3a. The pair at nest 13 began building again in a different place, but abandoned the new nest and returned to the old.

In Table 3 an * indicates that the same pair as in the first brood are concerned, and † indicates that only one member of the same pair was identified again. At no nest had we any proof that a bird had a different mate for the second brood.

TABLE 3.

Nest No.	No. of eggs laid.	No. of chicks hatched.	No. of chicks fledged.	Date of leaving nest.
1*	5	5	5	6.9
2*	4	3	3	24.8
3a*	4	4	3	16.9
5*	4	4	4	10.9
7†	4	4	4	26-27.7
10*	4	4	4	15.9
11*	4	4	3	19.8
12†	4	4	4	28.8
13*	4	4	3	5-6.8
16*	4	4 (?)	0	—
17*	4	4	4	29.8
Totals.	45	44	37	

The pair 13 laid another egg in the same nest later, but deserted this; and the pair 16, which had been mated in 1943, laid three more eggs in the same nest as before, but these also they deserted,

* The first chick to starve was removed by a parent.

so that in three attempts they did not raise a single chick. There were no other third broods.

Table 4 summarizes the figures for the second broods, for comparison with Table 2.

TABLE 4.

No. of nests.	No. of eggs laid.	Average.	No. of chicks hatched.	Average.	No. of chicks fledged.	Average.
11	45	4.09	44	4.00	37	3.36

It may be seen that the second broods were more successful than the first, and it is noticeable that the size of clutch was remarkably constant, though tending to be smaller than in the first broods. In Britain the B.T.O. Swallow Enquiry showed that first broods tended to be larger than later ones.

All four eggs which were incubated, but failed to hatch, were found to be without embryos. Two of these were in one nest.

Where the same hen laid two clutches the total number of eggs laid varied from 6 (No. 13, in three clutches) to 11 (No. 1).

Tables 2 and 4 may be summarized as under to show the percentage of success.

TABLE 5.

1st Brood.			2nd Brood.			Both Broods.		
% of chicks hatched to No. of eggs laid.	% of chicks fledged to No. of eggs laid.	% of chicks hatched.	% of chicks hatched to No. of eggs laid.	% of chicks fledged to No. of eggs laid.	% of chicks hatched.	% of chicks hatched to No. of eggs laid.	% of chicks fledged to No. of eggs laid.	% of chicks hatched.
88.24	79.41	90.00	97.77	82.22	84.13	92.04	80.53	87.69

In the B.T.O. Swallow Enquiry the average size of clutch varied from 4.18 to 5.00, with an overall average of about 4.4, and the average size of broods is given as 4.01 chicks in 664 nests in 1934, and 4.09 chicks in 596 nests in 1935. It is stated that "about 10 per cent. of the eggs failed." In Bavaria we found that the clutches and the broods were smaller, but that the percentage of success was about the same, perhaps slightly greater. Thus the Swallows in Britain raised more chicks because they laid more eggs, not because of better conditions after the eggs were laid, such as a more abundant or accessible food supply.

Between July 15th and September 1st, Hobbies (*Falco s. subbuteo*) were seen to take about eighteen Swallows, most of which were seized while perching on some light wires just outside the camp. A cat also killed one Swallow as it flew very low over the ground on a wet day.

NOTE ON INTERVAL BETWEEN BROODS.

Table 6 shows the interval between the fledging of first and second broods of the same pair.

TABLE 6.

Pair No. *1st brood flew.* *2nd brood flew.* *Interval (in days.)*

1	13.7	6.9	55
2	29.6	24.8	56
3	13.7	16.9	65
5	17.7	10.9	55
10	20.7	15.9	57
11	2.7	19.8	48
12	6.7	28.8	53
17	8.7	29.8	52

The unusually long interval at nest 3 was doubtless due to the necessity of building a new nest.

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LESSER WHITE-FRONTED GEESE ON THE SEVERN

BY

H. H. DAVIS AND PETER SCOTT.

ON December 16th, 1945, there were approximately two thousand geese on the salttings at the New Grounds on the Severn, near Berkeley, Gloucestershire. These were examined almost bird by bird, mostly in good light with occasional sunshine, by four observers —John Winter, Clive Wilson and the two authors—the scrutiny lasting five hours.

The vast majority were White-fronted Geese (*Anser a. albifrons*), but there were also about seventy Pink-footed (*A. fabalis brachyrhynchus*), one juvenile Bean-Goose (*A. f. fabalis*) [segetum type], one juvenile Grey Lag-Goose (*A. a. anser*), one juvenile Barnacle-Goose (*Branta leucopsis*), one juvenile Brent Goose (*B. b. bernicla*) and two adult Lesser White-fronted Geese (*Anser erythropus*)—seven species in all.

One of us (P.S.) is extremely familiar with Lesser White-fronts both in captivity and in their winter-quarters on the Caspian Sea and elsewhere. The identification of these two birds can therefore be regarded as absolutely certain, but it may be of interest to describe the characters noted in these two individuals, which were in different parts of the flock and appeared to be in no way associated.

The first was an adult and almost certainly a female. It was first seen at 200 yards range amongst a crowd of White-fronts and it fed to within about 100 yards. In the bright sunshine the yellow eyelids were very distinct and called forth the remark that they were "shining like a golden sovereign." It was slightly darker than the surrounding White-fronts and the base of the neck was noticeably more chestnut. The bill, which looked minute, was strikingly brighter pink, almost a coral pink. The general plumage was smoother in appearance because the pale edges to the feathers were narrower. The white blaze on the forehead did not go so far on to the crown as is sometimes the case with Lesser-White-fronts, but it was much narrower in shape when looked at from in front than the typical blaze of *albifrons*. An important character was the shorter neck, which usually appears more curved at the back, and the very characteristic and delicate shape and gait of the bird, which are almost impossible to describe in words.

The second bird was also an adult and almost certainly a gander. It was feeding with a flock of about three hundred White-fronts at the opposite end of the marsh. It was observed at not less than 400 yards and by that time the light had deteriorated. This bird was not very much smaller than the surrounding White-fronts, but was more noticeably dark than the first one had been when compared with its neighbours. The white blaze went right on to the top of the head between the eyes and the tiny bill was most noticeable amongst the larger White-fronts. It was only just

possible, at that range and in that light, to see the golden eyelids. Once again the general shape and carriage were very characteristic. There seems to be a greater depth to the after part of the body and folded wings than in *albifrons*, and this is accentuated by the short neck and small bill.

The Handbook of British Birds allows one fully substantiated previous record for *A. erythropus*—Fenham Flats, September 16th, 1886. Four further doubtful records are quoted. A reliable record of an adult male which visited tame birds of the same species in Lincolnshire in January, 1943 (*The Field*, August 18th, 1945), should also be included.

The possibility that Lesser White-fronts visited this country more frequently than was generally supposed, but passed unnoticed, had been discussed by the authors on the night before. The following factors have a bearing on this point :—

(1) White-fronts wintering in this country come from breeding grounds in Greenland and in N. Russia. There are indications that most of those on the Severn come from the eastern breeding grounds. (There is some evidence that White-fronts from Greenland generally have yellow bills and are darker in plumage. H.H.D. has recently noted odd specimens at the New Grounds which appeared to be of this type, and on November 23rd, 1945, obtained close views of a party of nine unusually dark birds with bright yellow bills. These, three adults and six immatures, made no attempt to associate with a hundred, or more, of the normal pink-billed birds feeding nearby). Pink-billed birds on the Severn cross the migration route of the Lesser White-front, and represent probably the largest flock of geese wintering in this country which does so. This therefore is the most likely flock to contain Lesser White-fronts.

(2) The pillboxes, built on the sea wall in 1940, which command an excellent view of the salttings and within 10 yards of which the geese frequently feed, provide better facilities for careful observation than can be found in any other haunt of geese. Even then flocks must be examined bird by bird at least twice before it is certain that an unusual bird has not been hidden by others as the glass passed by. We had been looking at that section of the flock for nearly an hour before the first Lesser White-front was spotted.

(3) At the end of November only a few hundred geese had arrived on the New Grounds. The recent influx has been unusually rapid and possibly affected by the early cold weather. This might or might not account for the rather exceptional incidence of abnormal migration in which individuals of five different species had taken up with the great flocks of White-fronted Geese. It may be interesting to note that whereas four of the species were represented by juvenile specimens, the Lesser White-fronts were adults. It is possible that juvenile Lesser White-fronts were present, but were overlooked.

In conclusion it seems reasonable to us to suppose that *A. erythropus* is not really quite so rare as has hitherto been imagined, and that it is infinitely worth while to examine all White-front flocks with that possibility in mind.

[Although the very careful description, coupled with Mr. Scott's intimate knowledge of the species, fully establishes the identification, it may be worth placing on record that I have myself had good views of one of the birds on two occasions, namely December 23rd, in company with Mr. Davis and others, and again on December 26th. Mr. Davis has informed me since the paper went to press that he has observed one or both birds on the following subsequent occasions :—December 28th (one), December 30th (almost certainly both), January 13th (possibly both), January 27th and February 13th (one). There is therefore good evidence to show that both birds were present until December 30th and that one remained until February 13th or later.—B.W.T.]

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

II. THE LESSER WHITE-FRONTED GOOSE

Photographed by PETER SCOTT AND GAVIN MAXWELL.

(Plates 11-14).

ALTHOUGH the general intention of this series is naturally to provide illustrations of wild birds photographed under natural conditions, an exception is made in the present instance owing to the special topical interest which the important record of Lesser White-fronted Geese (*Anser erythropus*) on the Severn published on p. 77 gives to photographs of this species.

The Lesser White-fronted Goose breeds in Norwegian, Swedish and Finnish Lapland and North Russia and ranges far eastwards into Siberia, but in less northerly latitudes than the White-fronted Goose (*Anser a. albifrons*). In Lapland, and apparently throughout its range, it shows a marked preference for more or less elevated ground, breeding in peat mosses or near streams and lochs on the fells, though in East Finmark, at any rate, it may be driven to resort to lower ground in backward seasons, when the fells remain under snow until late in the summer.

The Handbook of British Birds admits only one British record of this species as fully authenticated, that of a young male shot at Fenham Flats, Northumberland, by the late Abel Chapman on September 16th, 1886. To this must be added, if it is safe to assume that the bird was wild, the Lincolnshire record published by Mr. Peter Scott in *The Field*, August 18th, 1945, p. 171, of an adult which joined a pinioned pair belonging to Mr. William Tinsley in January, 1943, and left again on the following day. A female attributed to this species, obtained on the Norfolk side of the Wash on January 24th, 1900, was from the account given by Mr. J. H. Gurney (*Ibis*, 1902, pp. 269-275) clearly not typical, and several other records are insufficiently authenticated.

Considering that its Scandinavian breeding-grounds are much closer to the British Isles than any of the White-fronted Goose it is surprising that the species should be so rare in this country as it undoubtedly is, even when allowance is made for the probability very justly stressed by Mr. Scott that its visits are not quite so excessively uncommon as the records suggest.

The striking studies of birds brought back as young ones from East Finmark by Mr. Gavin Maxwell in 1939 (Plates 11-12) bring out extremely well the most important characters of the species, the small delicate bill, the white blaze extending far back between the eyes, and the conspicuous, swollen yellow eye-lids, and should be compared with the photograph of a typical White-fronted Goose (Plate 13) published for comparison. The bird in Plate 14 is one in the possession of Mr. Scott.

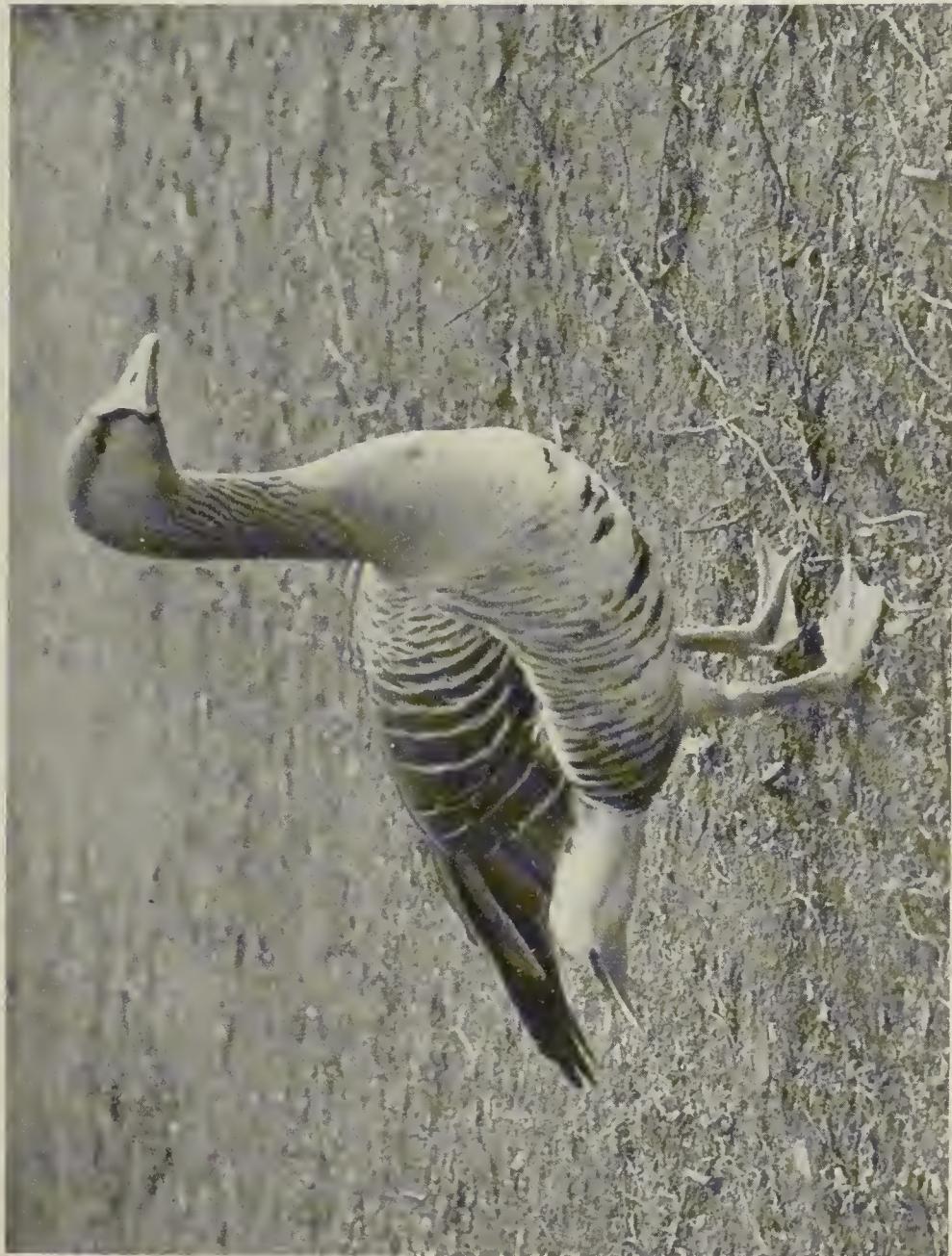
B.W.T.



HEAD OF LESSER WHITE-FRONTED GOOSE (*Anser erythropus*).
(Photographed by Gavin Maxwell).



LESSER WHITE-FRONTED GOOSE (*Anser erythropus*).
(Photographed by Gavin Maxwell).



WHITE-FRONTED GOOSE (*Anser albifrons*).
(Photographed by J. Hoskin).



LESSER WHITE-FRONTED GOOSE (*Anser erythropus*).
(Photographed by Peter Scott).

OBITUARY.

CHARLES BETHUNE MOFFAT.
(1859-1945).

CHARLES Bethune Moffat, to the great regret of his many friends, died on October 14th, 1945. He was born in the Isle of Man on January 16th, 1859, being the eldest of the seven children of the late James and Annie Moffat. When Charles was about a year and a half old, his parents came to Ireland and settled at Ballyhyland, Co. Wexford. It was at Ballyhyland that the young Charles began his study of Natural History, and it was there that in his mature years he made most of those careful and detailed field observations which formed the basis of much in his writings and lectures.

As a boy he was at school for a few years in the Isle of Man, but he finished his secondary education at a private school in Co. Wexford. In the year 1875 he entered Trinity College, Dublin, where he had a very distinguished career, securing First Rank Honours in Logic, Metaphysics and Ethics. In 1879 he obtained Senior Moderatorship in Mental and Moral Philosophy, was awarded a Gold Medal, and had his B.A. Degree conferred on December 17th.

Deciding to follow Law as his profession, he entered at King's Inns and was called to the Bar in 1881. But when he had taken only one Brief he was diverted from Law to Journalism. He was for many years attached to the (Dublin) *Daily Express* as a leader writer on Politics, Literature and Natural History.

With such a background, we can readily understand how Moffat was able to apply his great gifts with advantage to the study of Natural History in many of its branches. He became a zoologist of note ; he was an authority on bats and he wrote *The Mammals of Ireland* for the Royal Irish Academy. He was a botanist and an entomologist. But he was best known as an ornithologist. He was fortunate to find himself in his early years in an environment which gave scope for the development of his natural bent for bird-watching. Ballyhyland was an ideal place for an observer with its woods and streams and ponds and with its varied hinterland to the Blackstairs Mountains. There he watched and recorded in his diary what he had seen and heard. Half a century before bird-watching was brought to a fine art, he watched birds and noted every detail of their calls and songs and habits. Decades before the coming of the bird-specialists, he specialized in the ordinary birds of the countryside.

Moffat's articles on birds in the *Daily Express* were of a popular nature. In his bulky volume *The Life and Letters of A. G. More* (1897) he showed his great knowledge of birds, especially of Irish birds. He wrote a few articles for *The Zoologist*, but his most numerous contributions were to *The Irish Naturalist* (1892-1924), in which he published some 40 articles and short notes and the

reviews of upwards of 40 books on birds. From 1925 he wrote occasionally for the *Irish Naturalists' Journal*, of which he was one of the assistant editors.

Perhaps his most important contribution to ornithology was his paper "The Spring Rivalry of Birds," read to the Dublin Naturalists' Field Club on March 10th, 1903, and published in the same year in the June issue of *The Irish Naturalist*. It was the first time that the principle of Territory among birds, as now generally understood and accepted, was put before the public in these countries. His thesis, which he elaborated in later lectures and papers, was that the battles fought between the male birds in spring have for their object, not the winning of particular females, but the acquiring of suitable plots of land, and that the song and bright plumage of the male are a warning to other males and an intimation to a female that a suitable territory has been acquired. He was too optimistic about the low rate of mortality of young birds, but his view that "there is a large reserve of unpaired birds, and moreover of birds perfectly willing to mate, yet waiting patiently for vacancies to occur in some of the partnerships already existing," is accepted by many ornithologists.

Just as Moffat did not know of Bernard Altum's great book, *Der Vogel und sein Leben*, published in 1868, in which all the essentials of the concept of Territory, including song, were stated, so for more than twenty years his own paper on Territory was unnoticed by ornithologists both in England and America. But recognition came at last, and Moffat is now admitted to be not only an early exponent of the theory of Territory but one of the first to use the term in its modern sense.

While he remained to the end the consultant to whom Irish ornithologists naturally turned for help and advice, he largely devoted the last years of his life to the cause of Bird Protection. As Honorary Secretary and Treasurer of the Irish Society for the Protection of Birds he promoted the establishment of Bird Sanctuaries, and by letters to the press, by leaflets and by his Annual Reports he did much to spread the knowledge and love of birds.

P. G. KENNEDY.

NOTES.

SPRING MIGRATION ACROSS THE IRISH SEA.

ON March 9th, 1945, I was in a convoy moving slowly south through the Irish Sea. The day was brilliantly fine, the sea quite calm. In the morning the Welsh Hills were visible, but otherwise we saw neither coast. There was no fog, however. There was a very light southerly to south-westerly breeze.

Migration seen during the day was in such unexpected directions that it seems worth recording in detail.

CHAFFINCH (*Fringilla cælebs*). A male bird was on the boat at 8.20 a.m. Soon after it flew away to the north. A flock of about 25 birds overtook the boats in the convoy about 12.20 p.m., and flew steadily south-west rather low over the sea. Another party of about a dozen, at 1.30 p.m., flew in the same direction. A male settled on the boat about 5 p.m. and flew away again to south-west.

STARLING (*Sturnus vulgaris*). At 10.30 a.m., a flock of about 50 flew steadily over the boat going due south or a point west of south. During the rest of the day I saw single birds from time to time, once two together, usually flying about south-west, as if aiming for South Wales or possibly Somerset and Devon. One or two rested on the boat for a time.

MISTLE-THRUSH (*Turdus viscivorus*). About noon, one appeared flying south-west. It apparently flew right away, but possibly it returned, for some ten minutes later one came from the south and flew steadily past the boat, going almost due north. This might possibly have taken it to Ulster, more likely to south-west Scotland.

MEADOW-PIPIT (*Anthus pratensis*). Single birds were noted between 9 a.m. and 2 p.m. all flying north-west, as if from Pembrokeshire or south-west England to Ireland. One remained on the boat for some hours and once came within a couple of yards of me. It seemed to be tired.

It is just possible that some of these birds were deflected from their regular flight-lines by the sight of the convoy, but the steady flight of the southward going flocks of Chaffinches and Starlings did not in the least suggest this. The other flight-lines are not surprising, though it is curious to find pipits migrating north-west into Ireland and Starlings south-east out of Ireland on the same day.

H. G. ALEXANDER.

RAVEN'S NEST IN OCTOBER.

IN the *Westmorland Gazette*, October 13th, 1945, there appeared a short article stating that a Raven's nest (*Corvus c. corax*) had been found on Cautley Crags, near Sedbergh, Yorkshire, during the previous week. On October 28th a friend and I visited the Crags and after a short search found the nest. Unfortunately the eggs had been taken, but we could see that it was a new nest, as it had pieces of green heather woven into its structure. It was the usual

massive affair made of heather roots with a plentiful lining of sheeps' wool, and the nearby rocks were strewn with droppings, pellets, and one or two black feathers. Both Ravens were in evidence, and I noticed that they did not stray far from their nesting site, but continually circled over that part of the Crags. As further proof that they attempted to breed here during October it may be mentioned that that part of the Crags was examined thoroughly in July and no sign of this new nest was seen then.

J. H. HYATT.

"ANTING" OF STARLING.

ON October 24th, 1944, I watched at close range a Starling (*Sturnus v. vulgaris*) behaving strangely on the lawn. It was picking up something small from the grass and, with the object still in the tip of its bill, rubbing it vigorously on its thighs and the root of its tail under the tail feathers. At the same time the tail feathers were spread and agitated. Action was always swift and vigorous and was repeated several times. Binoculars showed that the object picked up was minute and light brown in colour. An examination of the exact spot on the lawn revealed that it swarmed with yellow ants, some carrying eggs. I have little doubt that the bird was deliberately preening itself with these. C. F. TEBBUTT.

[The singular behaviour which Mr. Tebbutt describes has attracted considerable attention in recent years, though this appears to be the first record of "anting" that has been sent to *British Birds*. The subject was discussed in detail by Mr. A. H. Chisholm (*Ibis*, 1944, pp. 389-405), who gives references to previous communications on the subject (though not, unfortunately, a regular bibliography), the most important of these being *Ornithologische Monatsberichte*, 1935, pp. 134-8, and McAtee, *Auk*, 1938, pp. 98-105. The application of ants to the plumage has now been recorded for a considerable number of birds, and for the Starling more frequently than any: Mr. Chisholm mentions some twenty instances in Australia and it has been observed in America as well as in Europe. It must be admitted that the functional significance of the behaviour is still somewhat obscure, but of several possible explanations the most promising seems to be that the acid produced by the ants acts as a skin stimulant in a manner somewhat analogous to that of a dust-bath. It is also suggested that it may help to rid the skin of ectoparasites and that the pungent odour may itself be pleasurable to the birds, though the evidence for a well-developed sense of smell in most species is poor.—EDS.]

OBSERVATIONS AT A GREENFINCH'S NEST.

IN May and June, 1944, my wife and I had under close observation the nest of a pair of Greenfinches (*Chloris ch. chloris*), which was built in the thick foliage of a sycamore tree, about 10 feet from the ground and 12 yards from a window of our house at Mytholmroyd,

Halifax, Yorkshire. The nest was under observation almost continuously during daylight hours and the following points are recorded as of principal interest.

The nest was found on May 20th, with four eggs, which hatched on June 4th, when the female was observed removing egg-shells and dropping them overboard. At no time during incubation was the female observed to be fed by the male, but on June 11th, a week before the young ones were fledged, the male was seen to fly into a tree, where the female joined him and, with quivering wings, received food from him. Although it is apparently the rule for both sexes to feed the young, feeding was in this case performed exclusively by the female. The food consisted entirely of a regurgitated, thick milky substance. On arrival at the nest the female occasionally deposited a supply of this on the edge of the nest and from this fed each nestling in turn. She frequently stayed to brood the young for a few moments. Feeding on an average took place every 30 to 35 minutes, with a maximum interval of 47 minutes and a minimum of 25 minutes. During the first seven days or so, when in the helpless stage, the young were fed more frequently than later, not more than about 30 minutes elapsing between the female's visits. After that period the intervals were extended to from 30 to 45 minutes.

The male seemed to spend most of his time with one or two other males flying up and down overhead and singing. He made occasional visits to the nest whilst the female was present, but was never observed to assist either with feeding or sanitation.

Almost invariably after feeding in the first seven days the female did some "grubbing about" among the young ones, and it was concluded that she was picking up and swallowing faeces. Subsequently these attentions diminished and then ceased altogether.

On June 10th and 11th a nestling was observed to climb laboriously on to the edge of the nest, turn facing inward and, wobbling precariously, let the droppings fall overboard clear of the nest. This was observed independently by my wife and myself. The outside of the nest was white-splashed as if with droppings, but this was quite definitely not the case. This white, dried substance was solely composed of unused regurgitated food which we had seen deposited, some of which had run down the side of the nest.

The young ones left the nest on June 18th, giving a fledging period of 14 days.

N. M. HEPWORTH.

NESTING OF WOOD-LARK IN NORTH YORKSHIRE.

A PAIR of Wood-Larks (*Lullula a. arborea*) was first seen by me on March 30th, 1945, on heathy ground recently planted with young conifers about two feet high in an area of woodland in the southern part of the North Riding of Yorkshire. Some acres of tall oak trees adjoin the site on one side.

The weather was bright and cold with a westerly gale blowing, making observation difficult. I noticed a pair of birds rise from the ground at a distance of about 30 yards and at first took them for Sky-Larks. I then noticed that they appeared to have short tails. Being familiar with the Wood-Lark in West Somerset I concentrated my attention on them, and as one of the birds soared the short tail was very evident. The song was inaudible owing to the high wind. This also interfered with observation on the ground, but I was able to see the eye-stripe through glasses.

The site was revisited on April 2nd with R. Wagstaffe, Keeper of the Yorkshire Museum, who confirmed my identification. On this occasion the song was distinctly heard. On April 28th, together with E. W. Taylor, a careful search was made for the nest. The weather was most unfavourable, with showers of hail and rain, and we failed to find it. We did, however, pick up an empty egg-shell which was definitely a Wood-Lark's, and one of the birds was seen to be carrying food. The birds were also seen on May 5th by Mr. R. M. Garnett and Mr. Taylor.

On June 10th, the two adult birds were seen first, and later three young birds fully grown keeping themselves apart from the adults, giving clear evidence that breeding had taken place.

I have not been able to hear of any previous case of the Wood-Lark's breeding in Yorkshire which has been clearly authenticated. Such a record is not included by Nelson in *Birds of Yorkshire*, although he gives instances of occurrences in several localities in the county.

E. M. RUTTER.

AGGRESSIVE BEHAVIOUR OF BLUE TITS IN WINTER.
MR. M. K. COLQUHOUN has shown (*antea*, Vol. xxxv, p. 234) that a social order in relation to territory exists in winter among Blue Tits (*Parus cæruleus obscurus*) and that a dominant bird reacts aggressively to birds lower down on the social scale.

I observed similar behaviour among birds in an area of gardens and fields at Abingdon, Berkshire, during the winter of 1944-45, but in most cases the threat reaction observed was much more vigorous than that described in Colquhoun's paper. In approach threat the dominant bird flies up to the intruder with strong wing beats terminated by a long swift glide on outstretched wings. Upon alighting it takes up an aggressive posture, which is dropped if the intruder flies off but which is maintained if the intruder has to be chased off. In posturing the bird opens and shivers its wings and fans and vibrates the tail. Sometimes the wings are energetically flicked.

On at least two occasions I have seen this posture used against a Great Tit (*Parus major newtoni*) and I have seen Great Tits posture in a similar manner at other Great Tits. I. KIMBREY.

EFFECT OF SNOW ON NESTING OF CHIFFCHAFF.
BEFORE April 24th, 1945, I found in the Tunbridge Wells, Kent, district, six nests of Chiffchaff (*Phylloscopus c. collybita*) containing

varying numbers of eggs. Four nests were over $1\frac{1}{2}$ ft. from the ground in bramble clumps and two were under 9 ins. in low lying bramble tangles.

During the period, April 28th to May 1st, the weather was very cold with many heavy snow showers. When these first occurred first thing in the morning vegetation was bent by the weight of the snow which laid for a few hours. This resulted in those nests situated over $1\frac{1}{2}$ ft. high in brambles being tipped, with loss of all or some of the eggs and subsequent desertion by the Chiffchaffs. The remaining low-lying nests survived the cold spell, as did also several known nests of the Willow-Warbler which were situated on the ground and one early nest of the Wood-Warbler.

I might perhaps add, that other small passerine nests of the warbler type survived, although built over 2 ft. up in the brambles, but were a little tilted, so that it would appear that the elongated nest of the Chiffchaf is not suited—when built some distance from the ground—to inclement weather.

P. A. ADOLPH.

SEDGE AND REED-WARBLERS COLLECTING FOOD OUTSIDE THEIR TERRITORIES.

IN late June, 1943, at Hickling Broad, Norfolk, four pairs of Sedge-Warblers (*Acrocephalus schœnobœnus*) had nests close together in a small marsh overlooked by a high bank. Two of the nests contained young which were fairly well-grown. In both cases, the parents were flying right out of the marsh and on to adjacent ground to collect food for their young. Similarly a parent Reed-Warbler (*A. scirpaceus*) with young at the same stage regularly flew right out of the *Phragmites* bed in which the nest was placed, passing beyond the territory of its neighbour on one side or the other, when collecting food for the young. Hence in both these territorial species, the bulk of the food for the young was obtained well outside the territory. Under such conditions the size of the breeding territory cannot bear a fixed relation to the availability of food. Incidentally Howard (*British Warblers*, Vol. ii, pp. 39, 58 (29, 48), 1907-14) mentions that Reed-Warblers collect some of the food for their young from neutral ground, though he evidently considered that, nevertheless, territory was related to food supply in this species.

DAVID LACK.

MISTLE-THRUSHES NESTING IN INNER LONDON.

THOUGH Mistle-Thrushes (*Turdus v. viscivorus*) not uncommonly nest in the Parks and other suitable sites in London, their doing so in a noisy thoroughfare, amidst incessant traffic, appears to be rare. It may therefore be of interest to record that my husband, the late Bertram Lloyd, had the opportunity of watching a breeding pair in the spring of 1936, in Tavistock Square, W.C.1., where at that time he was working in an office. The nest was well up in the fork of a Plane tree, and two young were safely brought off, one of

which, however, was killed by a cat when just fledged. During the weeks that my husband had the birds under observation, he noted that they showed great boldness, attacking prowling cats near their nest and driving them off, unlike the House-Sparrows and Starlings, who would fly away in fright. At times, the Mistle-Thrushes would even venture to fly across the roaring traffic in Southampton Row ! Occasionally they would be seen feeding on breadcrumbs, among House-Sparrows and Starlings, right under the windows of an office.

SYLVIA LLOYD.

COURTSHIP FEEDING OF MISTLE-THRUSH.

ON April 25th, 1943, in Marbury Park, near Northwich, Cheshire, a Mistle-Thrush (*Turdus v. viscivorus*) with food in its bill, flew from a stump, on which it was perching, and joined another adult on the grass. It offered the food to the second bird, which accepted and ate it, and it then mounted the back of this bird four times in fairly quick succession. Between each of these acts of or attempts at coition the two birds faced one another with bills wide open.

A. W. BOYD.

COURTSHIP FEEDING IN THRUSHES AND WARBLERS.

MAJOR Boyd's case of a male Mistle-Thrush (*Turdus v. viscivorus*) presenting food to the female is, so far as I know, the only record for this species. It is noteworthy because as recently as 1940 Lack (*Auk*, Vol. lvii, pp. 169-178) concluded from a search of the literature that courtship feeding apparently did not occur amongst any members of the genus *Turdus*.

The habit is of considerable biological interest, and the circumstances in which it occurs are well worthy of further study. As is well known, there are many birds in which the male regularly feeds the female during incubation, and in such cases the habit has an obvious functional value, though, as Lack has pointed out, it is by no means confined to species in which only the female incubates or universal amongst those in which this is the case. In others it occurs during incubation, but is definitely commoner before it. Whether it is ever confined entirely to the pre-incubation period and thus exclusively ceremonial in character seems uncertain. But it is clear that there is a real difference between such ceremonial feeding before incubation, or even during it in cases where the female regularly comes off the nest to feed herself, and the strictly "utilitarian" cases where the incubating female is fed by the male entirely. It is at least debatable whether the use of the term courtship feeding is desirable in the latter case, and yet the several types appear to intergrade so much that it is doubtful whether a clear-cut distinction can be made. At any rate it is clearly important that when courtship feeding is stated to occur in certain birds it should always be made clear which type or types is meant.

A point of interest duly noted by Lack but tending to be more

and more emphasized by fresh evidence is that courtship feeding may occur exceptionally or occasionally in species in which it is apparently not normally found or in which at any rate many individuals do not show it. It is now known that at least two species of *Turdus* come into this category, namely the Mistle-Thrush, as recorded above, and the Blackbird (*Turdus m. merula*). Courtship-feeding has been described in the Blackbird by Sauerbrei (*Orn. Monatsschr.*, 1926, p. 65), by whom it was observed on several occasions on two different days, and an attempt at it is described in our January issue (Manning, *antea*, p. 26), and cases of feeding of the female on the nest are reported by R. G. Adams (*Rep. Cornwall Bird Watching and Preservn. Soc.*, 1941, p. 28) and S. D. Gibbard (*Rep. Devon Bird-Watching and Preservn. Soc.*, 1943, p. 4).

Amongst the *Turdidae* courtship feeding is known to be regular only in the Robin (*Erithacus rubecula*), and in the related *Sylviidae* (warblers) it is not known to be so in any species, though in several the situation seems to be similar to that of the two thrushes discussed above. Jourdain, whose authority I have not traced, states (*Handbook*, Vol. ii, p. 16) that the female Wood-Warbler (*P. sibilatrix*) may rarely be fed by the male during incubation, and Ryves (*id.*, p. 3) records that although the female Chiffchaff (*Phylloscopus c. collybita*) normally comes off the nest to feed, she may rarely be fed by the cock. Col. Ryves kindly informs me that this is based on a single case, in which he saw a male with a grub approach an incubating hen, call her off, and feed her. Courtship feeding in the strict sense was recorded for the Willow-Warbler (*P. t. trochilus*), so far as I am aware for the first time, by R. H. Dunt (*antea*, p. 25). Amongst other warblers I know of only one case which might be interpreted as courtship feeding, that of a male Reed-Warbler (*Acrocephalus s. scirpaceus*) which was seen to offer food to the female while both were engaged in feeding young (H. E. Howard, *Brit. Warblers*, Vol. ii, p. 63), the female responding by wing-shivering in spite of her own beak being full of insects. This case should, however, be compared with the observations of E. Hosking and Stuart Smith (*antea*, Vol. xxxvii, pp. 131-3) on a pair which they watched closely. These observers found that when one bird was brooding and the other arrived with food, the brooding bird, whether male or female, shivered its wings and opened its beak widely, appearing to beg for the food, though on receiving it it passed it on to the young. The behaviour recorded by Howard was clearly very similar, except that the birds were off the nest, and more observation on the Reed-Warbler appears desirable before courtship feeding is definitely accepted as occurring even occasionally in this species.

B. W. TUCKER.

ICELAND REDWING IN LANCASHIRE.

ON November 24th, 1945, a Redwing was found in the open country about a mile south of Burnley, Lancashire, and brought

to me for identification. From its wing measurements, dark mantle, and throat markings I suspected that it might be an Iceland Redwing (*Turdus musicus coburni*), an opinion which was shared by Mr. C. Oakes to whom I showed the bird. The specimen was forwarded for examination to Dr. J. M. Harrison, who kindly confirmed the identification. The bird is a female with a wing of 122 mm.

Dr. Harrison was successful in making a fairly good skin of it and the specimen is now in his collection.

ARTHUR WELCH.

GREAT SPOTTED WOODPECKER KILLED BY GREY SQUIRREL.

MR. H. W. Butcher, of Buckland Common, reported to me that when walking in High Scrubs Woods, Herts, on June 17th, 1945, he observed a Great Spotted Woodpecker (*Dryobates major anglicus*) making its way up the trunk of a tree in the direction of a Grey Squirrel (*Sciurus carolinensis*), which was at rest on a branch of the same tree. When the woodpecker was opposite the squirrel sprang on the bird and then let it fall to the ground. Mr. Butcher waited for some time, but the squirrel made no further attempt to interfere with the bird, which was left dead at the foot of the tree. The next day he brought the woodpecker, an adult male, to the Tring Museum, having found the bird where he left it. Apparently it had received no further attention from the squirrel. Mr. A. H. Bishop has examined the woodpecker and reports having found wounds on one of the wings and the neck, which, no doubt, were the cause of the death of the bird.

WILLIAM E. GLEGG.

BARN-OWL ROOSTING IN CONIFER.

DURING the last week in October and throughout November, 1945, a Barn-Owl (*Tyto a. alba*) roosted regularly in the upper branches of a young spruce tree, about fifteen feet from the ground, in the Duddingston Loch Bird Sanctuary. *The Handbook* does not mention conifers as being used as roosting places by this species.

D. R. ANDERSON.

SPOONBILL IN GLOUCESTERSHIRE.

ON September 4th, 1945, I observed a Spoonbill (*Platalea l. leucorodia*) resting near Mallard on the mud flats of the New Grounds on the Severn, near Slimbridge, Gloucestershire.

Subsequently the characteristic feeding behaviour with bill immersed and the head making strong and rapid sweeps from side to side, was well seen and its various features noted at close range, including the yellow flush on the breast.

It was also seen by Mr. H. H. Davis on September 5th, but in spite of further searches on September 6th and 8th it was not seen again.

This appears to be the only record for the county since one was shot near Gloucester on February 17th, 1920 (*antea*, Vol. xiv, p. 234).

RONALD E. ALLEY.

GLOSSY IBIS IN NORFOLK.

ON October 27th, 1945, in company with two other observers, we had excellent views of a party of six Glossy Ibis (*Plegadis f. falcinellus*) over Hickling Broad. We first saw them in good light flying at between 20 and 30 yards above us, when they appeared as large black birds of the heron type, with outstretched, only slightly bent, necks, and decurved bills, and legs protruding beyond the tail. While being mobbed by large gulls, they gave a call, rendered as "kra--ak," but this was not heard again. The wing action was slow and regular, with frequent long glides. The most constant formation was in a straight line. We reckoned by the comparative length and curvature of bill, that the party consisted of two adults with four immature birds.

Subsequently during the day, and the following day, we frequently flushed them from a small area of marsh, and occasionally when the birds were seen in front of a background of trees, noted that their general colouring was purplish-brown.

Other observers confirmed the record, on the second day.

P. R. WESTALL.

[We are informed that these birds were also seen by E. Hosking, B. K. Montgomery, R. J. Raines, Capt. G. K. Yeates and others.—EDS.]

FERRUGINOUS DUCK IN NORFOLK.

ON December 3rd, 1945, I saw a pair of Ferruginous Duck (*Aythya n. nyroca*) on Rockland Broad, Norfolk. Gunfire disturbed them from a reed-bed on the edge of the water, where they were skulking with several Coots. I watched them swimming past, only about ten yards away in bright sunlight and showing up very well against the blue water. Through my x8 binoculars and x15 telescope I could see every detail, and the following notes were taken on the spot :

The drake was a very warm chestnut with darker coloured back ; even the white eye was seen. Both sexes showed the white under tail-coverts, and even whilst swimming the drake's white wing-mark showed. They appeared to be about the same size as Tufted Duck and were smaller than Pochard. After a while they took to flight with some Coot, beating along the surface before getting under way and the drake clearly displaying the white wing-band.

On December 9th my friend Mr. G. Robinson also saw them and made a field sketch, which was shown to members of the Norfolk and Norwich Naturalist's Society at their recent meeting. On this occasion they were amongst a party of Wigeon. Incidentally both a Red-Necked Grebe and a Goosander have been seen on this Broad by me recently.

MICHAEL J. SEAGO.

“INJURY-FEIGNING” OF WOOD-PIGEONS.

IN 1945 between April 24th and September 22nd, I have disturbed Wood-Pigeons (*Columba p. palumbus*) from twenty-two different nests on thirty-five occasions, and have observed definite “injury-feigning” three times, as well as seven instances of birds flying to within a few inches of the ground.

Definite “injury-feigning”:—Nest (1). About 20 feet up in large oak at edge of pasture, August 5th. The bird went on to the ground near the tree, where I could see it clearly. It walked several feet with its wings outstretched but did not flap them, and then flew away. Two young under a week old were in the nest.

Nest (2). About 25 feet up in crab in fairly thick part of wood near edge, August 26th. Pigeon went on ground about 25 yards from nest-tree outside wood and remained there for a short time flapping its wings loudly. Two young under one week old in nest.

Nest (3). About 25 feet from ground in birch in fairly open part of wood, September 10th. Pigeon flew silently to ground among bracken 12 yards from tree, and stayed there flapping its wings, not very loudly, afterwards flying away almost touching tops of bracken and with peculiar erratic flight. Two young about 10 days old in nest.

Four times when pigeons flew very near the ground, the birds were from nests with young. This happened twice from the above-mentioned nests (2) and (3), and twice from another nest. On one occasion the bird from this last nest continued flying low for quite 100 yards over a neighbouring ploughed field; and the other time it was standing at the edge of the nest when disturbed.

The first from eggs was from a nest with two eggs clearly on the point of hatching on May 31st, the second from a nest with one egg on August 18th, and last from the same nest 14 days later when it had two eggs. All times were thus near beginning or end of incubation (cf. *Handbook*, Vol. iv, p. 204, foot-note 2, where observations on the stage of incubation at which “injury-feigning” occurs are stated to be desirable). Six other birds from as many nests with one egg each, flew without any demonstration; but one egg could possibly have been the full clutch in three of these, though not in the others.

K. R. CHANDLER.

SPOTTED REDSHANKS IN CO. MAYO.

FROM August 21st to August 24th, 1945, two Spotted Redshanks (*Tringa erythropus*) were present on the shore of Lough Carra, Co. Mayo. On August 25th three were together and remained until August 31st. Two remained until September 5th, after which I was unable to trace them anywhere. On September 13th, 14th and 15th, a single bird was present.

I am acquainted with the species and the birds were seen under excellent conditions, the lack of white on the secondaries being

noted in flight and the note heard repeatedly. The Spotted Redshank has only twice before been recorded inland in Ireland and on no occasion have more than two birds been seen together.

ROBERT F. RUTLEDGE.

DOTTEREL IN NORTHAMPTONSHIRE.

ON July 21st, 1945, I had a good view with a telescope at 40-50 yards' range of a Dotterel (*Eudromias morinellus*) at the Northampton Sewage Farm. The bird was slightly larger than the Ringed Plover (*Charadrius hiaticula*) which were present at the same time. The head showed a broad white band extending well above the eye and reaching back to the nape, and the crown and forehead were sepia. Round the breast there was a white band contrasting sharply with the lower breast and belly, which appeared a kind of reddish purple colour and very glossy. The breast above the white band appeared of a brownish colour and the upper parts similar but darker. The throat and under tail-coverts were white, and the legs greenish.

R. E. BURTON.

PRATINCOLE ON LUNDY.

ON February 21st, and again on March 14th, 1945, Charles Robertson, a shepherd on Lundy, had good views of a Pratincole (*Glareola pratincola*) on the island. Robertson, who is an observant man, first saw the bird on the wing, hawking up and down a combe on the east side of the island and momentarily took it for some kind of swallow, but immediately realized that it was too large and differently coloured. He watched it for ten minutes or more and was able to note the buff throat and ring of black edging it and the swallow-like tail. He had no notion what kind of bird it was, but told his wife about it on returning home, and she looked it up in Coward's *Birds of the British Isles*. Immediately he saw the illustration of the Pratincole he said "That's the bird."

On the second occasion the bird, probably the same one, was on the ground by a small pond, but took wing immediately and, after hawking along a streamlet for a turn or two, made off to sea in a south-westerly direction.

Questioned about the bird some weeks later, he said that he did not remark the white at the base of the tail, but explained that the most consistent view he had of it was of the underneath parts, the bird flying about overhead. He was quite definite that the underside of the wing was not black, showing that it was not a Black-winged Pratincole (*Glareola nordmanni*). F. W. GADE.

SANDWICH TERN IN SOMERSET IN DECEMBER.

IN the early morning of December 6th, 1945, a tern was seen flying about over the reservoir at Cheddar by the Keeper, Mr. P. Channon. I was present in the afternoon, when the bird was found dead on the steps which lead up from the water. I took it home, and with

the aid of Volume v of *The Handbook of British Birds*, I identified the bird as a Sandwich Tern (*Sterna s. sandvicensis*) in its first winter plumage. I sent it to Mr. B. W. Tucker, who verified the identification.

The Handbook gives December 15th, 1875, Yorks., as the last winter occurrence of this species in the British Isles.

STANLEY LEWIS.

GREAT SKUAS ON NORFOLK-SUFFOLK COAST.

ON October 23rd, 1945, two Great Skuas (*Stercorarius s. skua*) were seen among a flock of gulls (mostly juvenile) waiting for the arrival of the herring drifters off the mouth of the river at Great Yarmouth. Together with the rest of the flock, they only followed the vessels just inside the river mouth and then returned to sea again. No victimisation was seen. A S.W. gale was blowing.

C. F. TEBBUTT.

[Great Skuas are regular on the herring grounds off Norfolk and Suffolk in autumn, but are seldom seen close inshore. Ticehurst (*Birds of Suffolk*, p. 428) states that "Rarely single birds are seen in autumn at the mouths of our harbours harrying gulls, and have been recorded at Yarmouth harbour and outside the mouth of the Stour."—EDS.]

WAXWINGS IN GREAT BRITAIN IN 1944.—The following are additions to our records previously published (*antea*, Vol. xxxvii, pp. 196, 213, Vol. xxxviii, pp. 34, 154, 300) of the invasion of Waxwings (*Bombycilla g. garrulus*) in 1944.

NORTHAMPTONSHIRE.—Dr. A. G. Bull informs us that a party of eight was seen almost daily in his garden on the edge of Northampton from March 22nd to April 2nd, 1944.

LANCASHIRE.—Mr. H. Plimmer reports that he saw a flock of fifteen on March 8th, 1944, about half-a-mile east of the centre of Ashton-under-Lyne, by the side of the road to Stalybridge. They allowed an approach to within 10 ft. A smaller flock (twelve) was seen on March 11th and thrice on March 12th, at places within 250 yards of where the birds were seen on the first occasion.

LATE WHITETHROAT IN BEDFORDSHIRE.—Mr. C. W. Towler informs us that he had a good view of a Whitethroat (*Sylvia c. communis*) in a hedge at Biggleswade, Bedfordshire, on October 29th, 1944.

SPOONBILL IN SUFFOLK.—Mr. P. A. Clancey informs us that a Spoonbill (*Platalea l. leucorodia*) frequented Martlesham Creek, Woodbridge, Suffolk, for a few days in late August, 1941. Though almost an annual visitor to Suffolk in spring it is comparatively rare in autumn (Ticehurst, *Birds of Suffolk*, p. 318).

GREY PHALAROPE IN SOMERSET.—We have received for examination a Grey Phalarope (*Phalaropus fulicarius*), a bird of the year, which was seen alive near Minehead, Somerset, by Mr. A. V. Cornish on Sept. 19th, 1945, and found dead on Sept. 20th.

REVIEWS.

Somerset Archæol. & Nat. Hist. Soc., Ornithological Section. Report on Somerset Birds, 1944.

THIS contains many valuable records and others of purely local interest. Blagdon Reservoir has been well watched and provides good notes on duck, some in considerable flocks, and waders ; these include a flock of 14 Smew and a Spotted Redshank ; a concourse of at least 1,500 Coots was counted there in October.

It is good news to hear of an increase in the number of Wook-Larks and to learn that Buzzards bred again outside their Exmoor stronghold, and that Stonechats have at last recovered from the set-back they suffered in January, 1940. Reed-Warblers bred again in the West Somerset locality where they nested in 1943, as recorded in *British Birds*. Hoopoes in April and August, Hobby in September and two Snow-Buntings in March were all reported, and a Spoonbill seen in May, as already noted in this journal, was the first to be recorded for many years.

The list of arrivals of summer migrants shows that the first Cuckoo came as early as April 4th and that once more an early House-Martin (March 19th) arrived well before the Sand-Martin. The "departure" dates include a House-Martin on December 28th, but some of these might better be recorded as "passing birds," or "birds last seen"—such records as Willow-Warbler August 20th, Yellow Wagtail August 27th, and Turtle-Dove August 7th.

A.W.B.

Ornithological Record for Derbyshire, 1944. By. W. K. Marshall.

THE Derbyshire record this year is duplicated owing to printing difficulties. Names of contributors are given in the introduction, but the individual observations are not initialled. We think this a retrograde step : the name of the observer is an essential part of any record and in the case of the less common birds may be an important factor in authentication. The reason given, lack of space, is hardly convincing when names of birds in the county list are given even when there are no notes on them.

A Hoopoe is recorded at Ashbourne on April 14th and twenty-six Whooper Swans at Allestree on November 12th to 13th. A pair of Garganey were present at Repton during the breeding season and probably nested, but it is "not completely certain" that four ducklings seen on June 4th belonged to these birds. There is a record of two Oyster-catchers and three of Manx Shearwaters during September. A Scandinavian Lesser Back-backed Gull with 15 of the British form is recorded without details or any locality.

Special sections deal with observation on the singing of a Nightingale at Allestree (is a Nightingale in South Derbyshire worth so much detail when apparently space is short ?), on Great Spotted Woodpeckers, and on a Starling roost at Brailsford.

British Trust for Ornithology : Eleventh Report for the year 1944, issued 24th September, 1945.

THIS Report bears witness to the flourishing condition of the Trust notwithstanding the handicap of war-time conditions and records a remarkable increase in membership during the war years from 571 in 1939 to 1,078 in 1944, due mainly to the energies of Mr. James Fisher, Hon. Secretary from 1939 to 1944, whose Penguin volume *Watching Birds* has introduced many new members to the Trust. Though the war has naturally restricted public activities it was found possible in 1944 to hold a regional meeting in Manchester as well as the annual general meeting in London.

The first charge on the Trust's funds continues to be its contribution to the maintenance of the Edward Grey Institute of Field Ornithology at Oxford. The National Ringing scheme, founded by our late Editor, Mr. H. F. Witherby, and now run by a Committee of the Trust, continued to function on a restricted scale, as already recorded in this journal. The main enquiries sponsored

by the Trust during the period under review have been the economic investigations on the Rook and the Wood-Pigeon, financed by the Agricultural Research Council and carried out at the Edward Grey Institute, which are still in progress. Under war conditions it was impracticable to organize any new general enquiries, but data continued to be collected on Hatching and Fledging, Nest Sanitation, and the spread of the Fulmar and Black Redstart, and the annual sample census of heronries was maintained.

LETTERS.

ROBIN FEEDING YOUNG SONG-THRUSHES.

To the Editors of BRITISH BIRDS.

SIRS,—With reference to your comments on the note on a Robin feeding a fledgling Blackbird (*antea*, Vol. xxxviii, p. 355), there is another occurrence of a Robin feeding a brood of young Song-Thrushes mentioned, and illustrated with three photographs, in one of Richard Kearton's early books, *Wild Nature's Ways* (1903).

In this instance a male Robin had been feeding his sitting mate so assiduously that she refused to take any more food, on which he transferred his attention to an adjacent brood of young Song-Thrushes. These too he fed so industriously that once, when one of the parent thrushes returned with food for its young, it was forced to brood them until they were hungry again.

On one occasion, when one of the parents arrived at the nest at the same time, it chased the Robin off—though only for the latter to return when the Song-Thrush had departed again.

D. J. MAY.

BIRD OBSERVATORIES IN THE BRITISH ISLES.

To the Editors of BRITISH BIRDS.

SIRS,—In view of the increasing development of Bird Observatories in the British Isles, the British Trust for Ornithology was asked to consider the setting up of a Bird Observatories Sub-Committee to co-ordinate the work and to standardize the methods of keeping records at these Observatories. A committee was appointed on December 19th, 1945, composed of the following members :

Mr. W. B. Alexander	(Edward Grey Institute of Field Ornithology).
Miss E. P. Leach	(Bird-Ringing Committee of the British Trust for Ornithology).

Mr. R. M. Lockley and

Mr. E. J. M. Buxton (Skomer Island and Skokholm).

Mr. H. F. D. Elder (Isle of May).

Mr. G. Waterston (Fair Isle).

The Committee desires to inform readers of *British Birds* that accommodation for a limited number of observers will be available this season at these stations. For further particulars, application should be made :—

for Skomer I. and Skokholm to the Hon. Wardcn, Field Study Centre, Skomer Island, Marloes, Haverfordwest, Pembrokeshire;

for the Isle of May to the Hon. Secretary, Midlothian Ornithological Society, Blenheim, Gifford, East Lothian;

for Fair Isle to George Waterston, 27, Inverleith Terracc, Edinburgh.

Any general enquiries should be addressed to me at the Edward Grey Institute of Field Ornithology, 7, Keble Road, Oxford.

W. B. ALEXANDER,

Chairman,

BIRD OBSERVATORIES SUB-COMMITTEE.

NOTICE TO CONTRIBUTORS.

Contributors are asked to observe the following points, attention to which saves the waste of much editorial time on trivial alterations.

MSS. if not typed should be clearly written. Authors of papers, especially those containing systematic lists, lists of references, tables, etc., should consult previous papers on similar lines in *British Birds* as a guide to general presentation and set-out, including use of particular type, stops, and other conventions, such as date following the month (January 1st, etc., not 1st January), names of books and journals in italics, not inverted commas, and so on. Capital initial letters are to be used for proper names of definite species, but not for names used in a general sense or covering more than one species : thus "Great Tit," but "flocks of tits." [In systematic lists the whole name should be in capitals.] The scientific name (underlined in MS. to indicate italics) follows the English name in brackets without any intervening stop. Scientific nomenclature follows *The Handbook of British Birds* or H. F. Witherby's *Check-List of British Birds* based on this. When the subspecific name (if this is used) repeats the specific name the initial letter only should be used for the latter; otherwise the whole name should be given in full : thus "*Parus m. major*," but "*Parus major newtoni*."

Notes should be drawn up in as nearly as possible the exact form in which they will be printed, with signature in BLOCK CAPITALS. Though suitable headings and scientific names can be added by the Editor, if necessary, they should be inserted by authors as far as possible. Communications should always be as concise as possible, though reasonable detail can be given where this is important. Notes or records of subsidiary importance may be abbreviated or otherwise modified by the Editor for inclusion in the section of "Short Notes." Maps or graphs must be *neatly* and *boldly* drawn in Indian ink, with due allowance for reduction when necessary.

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CONTENTS OF NUMBER 4, VOL. XXXIX, APRIL 1, 1946.

PAGE.

Clutch and Brood Size in the Robin. By David Lack ...	98
Breeding of the Black Redstart in Britain : a century-old record. By G. W. Temperley	110
Studies of some species rarely photographed. III. The Cirl Bunting. Photographed by George Yeates	112
Notes on the Food of the Kestrel. By J. C. S. Ellis ...	113
Notes :—	
Jackdaws visiting nest holes in autumn (K. R. Chandler) ...	116
Courtship presentation by Starling (Flt.-Lt. G. Beven) ...	116
Display of Nuthatch in Winter (F. Coltart)	116
"Injury-feigning" of Nuthatch (Major G. E. Took) ...	117
Display of Spotted Flycatcher (E. V. Wilford) ...	117
Red-breasted Flycatcher in Lancashire (Clifford Oakes) ...	117
Willow-Warbler using threat-display to artificially produced cuckoo-note (Stuart Smith)	118
Incubation and fledging period of Olivaceous Warbler (C. J. Gent)	118
Juvenile Robin singing in June (D. J. May) ...	119
Courtship feeding of Hoopoe (Derek Goodwin) ...	119
Roller in London County in January (H. S. Kerley) ...	119
Snowy Owl in Kirkcudbrightshire (Rev. E. T. Vernon) ...	120
Kestrel capturing a bird in full flight (F. Coltart) ...	121
Marsh-Harrier in South of England in breeding-season (W. Macnae)	121
Feeding of female Black Kite by male (Derek Goodwin) ...	121
Spoonbill in Co. Galway (Major Robert F. Ruttledge) ...	122
Feeding behaviour of North Atlantic Shearwater (Flt.-Lt. G. Beven)	122
Black-necked Grebe breeding in Angus (Evelyn V. Baxter and Leonora Jeffrey Rintoul)	123
Notes of Turtle-Dove (Derek Goodwin)	123
Note of Woodcock (Georges Olivier)	124
Ruffs in Co. Kildare (A. G. Mason)	124
Unusual behaviour of Green Sandpiper (Bernard Jeans) ...	124
Chipping-period of Lapwing's eggs (R. H. Brown) ...	124
Breeding of Black-winged Stilts in the Netherlands in 1944 and 1945 (Prof. G. J. van Oordt)	125
Little Gulls in Aberdeenshire (Adam Watson) ...	126
Common Gull in second year holding territory (Major Robert F. Ruttledge)	126
Wintering Lesser Black-backed Gulls in Solway Firth area (R. H. Brown)	127
Short Notes :—	
Golden Oriole in Yorkshire, Hampshire and Dorset. Late Swift in Yorkshire. Increase of Buzzards in Sutherland. Bill-colour of Heron in breeding-season. Avocets in Hampshire. Quail breeding in Wiltshire	127

CLUTCH AND BROOD SIZE IN THE ROBIN

BY

DAVID LACK

(Edward Grey Institute of Field Ornithology, Oxford).

INTRODUCTION.

THE following paper summarizes data on clutch and brood size in the Robin (*Erithacus rubecula*), sent in by a large number of observers in response to private letters and to requests in *British Birds*, the *Ibis* and the bulletin of the British Trust for Ornithology. In addition, search was made through the standard journals in ornithology and natural history, up to 1945 inclusive for both British and Continental sources. The original material and the references to isolated nest records are far too bulky to publish, and have been deposited at the Edward Grey Institute. The data revealed certain trends of variation in clutch-size, and search was then made of the literature to determine the extent to which the same trends might be found in other species. This general study is to be published in a separate paper in the *Ibis*, so that only the briefest reference is made here to other species of birds, and to the general factors which may affect clutch-size.

Despite the large number of records received, the material was inadequate to settle certain points, including whether there are regional and annual variations in clutch-size in Britain, and whether nesting success may vary with the season and with the size of brood. The enquiry is therefore being extended to include 1946, and readers are invited to help. Nest records should be sent to the Edward Grey Institute, in the form (i) number of eggs; (ii) county; (iii) date, if possible date of laying of eggs or of hatching of young, but if not, date of finding. Observers should make sure that the clutch is complete, either by observing the hen incubating or by re-visiting each nest once, to ensure that further eggs have not been laid. Records of nesting success are particularly required, in the form (i) number of eggs laid; (ii) number of young hatched; (iii) number of young fledged, with (iv) dates. These are of special interest when an observer can supply a series for his district.

Experienced oologists have no difficulty in finding Robins' nests, merely by searching in likely places, but the ordinary observer does not usually succeed in this way. Two other methods are available. The first is to distribute old tins, jam-jars and similar objects in likely localities before the nesting season, spacing them well apart as the Robin is territorial. The second is to see or hear a cock Robin feed the hen, and then to keep the latter in view until she returns to her eggs, which she usually does very quickly. The incubating hen Robin leaves the eggs from one to three times each hour, and while she is off the eggs the cock feeds her. Of course, courtship-feeding also occurs before the hen has a nest, but it is common during incubation.

AVERAGE CLUTCH-SIZE IN ENGLAND.

The *Handbook* gives the clutch of the British Robin as "usually five or six, but three, four, and seven to nine, and even ten on record . . .". This gives a misleadingly high impression of the average clutch. The present enquiry, based on 1,091 field records, shows the average clutch in England and Wales to be exactly five eggs; 2 per cent. of the clutches consisted of three eggs, 19 per cent. of four, 55 per cent. of five, 22 per cent. of six, and 1 per cent. of seven eggs. In addition, three clutches of two eggs were reported and two of eight eggs, at least one of the latter being due to two hens laying in the same nest.

In addition to the data of field observers, many oologists kindly furnished records of collected clutches. These showed, as was to be expected, that the average clutch in egg cabinets is greater than in the wild, due to the fact that collectors take or retain chiefly the larger clutches.

TABLE I. Clutch-size in Nature and in Egg Cabinets.

Period and Source	No. of nests	Data from all dated English clutches.						Average Clutch	Differ- ence
		c/3	c/4	c/5	c/6	c/7	c/8		
April 1-28 :—									
Nature	534	2%	17%	63%	18%	—	—	4.97	0.48
Egg Cabinets	115	1%	9%	48%	33%	6%	4%	5.45	
April 29-June 2.									
Nature	363	2%	17%	47%	31%	3%	—	5.16	0.48
Egg Cabinets	173	1%	10%	28%	46%	13%	1%	5.64	

A few field observers who submitted past records from bird diaries also showed a bias in favour of the higher clutches. In some cases, this was because it was the larger clutches which were thought worth special record in the diary, various other (usually the smaller) clutches being listed under nests found but without actual egg data. In other cases, the bias was due to the observer omitting clutch records of four eggs or less, under the impression that such clutches were incomplete. Actually, a full clutch of four is nearly as common as one of six eggs.

BREEDING-SEASON.

Some observers recorded the date of completion of the clutch, and others gave the date of hatching, from which the former is approximately given by subtracting 13 days. However, most observers gave only the date of finding the nest with eggs. It is preferable to analyse the data in terms of date of completion of clutch, so, as a rough approximation, five days has been subtracted from the date of finding. This figure is arbitrary. It was arrived at by allowing for the fact that about one quarter of the Robins'

nests are destroyed during incubation, while in addition most observers seem to find their nests in the early rather than the late stages of incubation.

By grouping the nest records into weeks, some idea is gained of the breeding-season of the Robin in England. This is probably not quite accurate, because nests are easier to find in April than later in the year, when the ground vegetation has grown up, while the nest-finder has more distractions as regards other species during May and June. Incidentally, the clutches from egg cabinets are badly biased as to breeding-season, owing to the fact that the larger clutches favoured by collectors are commonest in May. Field observers found most Robins' nests in the period April 8th-21st, whereas in egg cabinets the most favoured week was May 6th-12th.

TABLE II. Usual Breeding-Season of the Robin
in England & Wales.

<i>Date of completion of clutch.</i>	<i>Percentage of recorded clutches,</i>		
	<i>(i) by field observers</i>	<i>(ii) in egg cabinets.</i>	
March 2-17	1%
18-24	2%
25-31	5%
April 1-7	10%
8-14	14%
15-21	14%
22-28	11%
April 29-May 5	10%
May 6-12	7%
13-19	6%
20-26	6%
May 27-June 2	4%
June 3-9	3%
10-16	2%
17-23	2%
June 24-30	1%
July 1-7	1%

The breeding-season of the Robin is different in different parts of its range. As shown in Table III, it starts earlier in the south than the north of the range, for instance about a month earlier in the Mediterranean region than in Scandinavia. Nesting also starts earlier in the west than the centre of Europe, e.g., 3-4 weeks earlier in England than in Central Europe at the same latitude, earlier in Scandinavia than in Finland, and earlier in the Channel Islands than in Central France. Breeding continues later on the Continent than in England. Thus July nests are very uncommon in England, but this is the regular time for second broods in Germany (Rey, 1912) and in Eastern Galicia (Prazak, 1897).

TABLE III. Usual Breeding-Season of the Robin in Europe.

Percentage of recorded clutches.

Date of Completion of Clutch	Germany,			
	England & Wales (1,091 clutches)	N. France, Switzerland. (106 clutches)	Norway & Sweden. (82 clutches)	Finland. (77 clutches)
March 2-17	...	1%	—	—
18-31	...	7%	—	—
April 1-14	...	25%	3%	—
15-28	...	24%	13%	—
April 29-May 12	17%	35%	21%	6%
May 13-26	12%	23%	40%	30%
May 27-June 9	7%	8%	17%	36%
June 10-23	4%	8%	16%	18%
June 24-July 7	2%	7%	5%	5%
July 8-21	0.4%	3%	1%	3%
July 22-August	—	1%	—	1%

Canary Is.—16 dated clutches from Gran Canaria and Tenerife, March 13-June 10; 62% in April, most of rest in May (collected). Koenig (1890) says breeding starts earlier on Palma than on Gran Canaria and Tenerife.

Azores.—23 dated clutches April 15-June 17; 91% May 6-June 6 (collected).

North Africa.—15 dated clutches April 12-July 1; nearly all April 12-May 12 (collected).

Spain and Portugal.—7 dated clutches April 14-June 7.

Jersey (Channel Is.).—38 dated clutches April 7-June 13; 84% April 7-May 15

Basse-Bretagne.—From last week April to June (Lebeurier and Rapine, 1936).

Rothiemurchus (Inverness).—51 dated clutches March 19-August 16; 90% March 26-June 10.

Holland.—48 dated clutches April 19-July 9; 85% April 25-June 14 (collected).

Many of the above records are of collected clutches, so they should be regarded as only a suggestion and not an accurate indication of the breeding season.

When Rowan and other workers showed that the growth of the gonads was stimulated by increasing daylength, it was tempting to correlate the time of the breeding-season with the length of day in the region concerned. However, Baker (1938, 1939) was able to show that there is no obvious correlation between the two in nature, and remarked: "One is forced to the conclusion that light is only one of the factors concerned." As Baker pointed out, whatever proximate factors may affect the physiology of the gonads, the breeding-season is ultimately determined by natural selection, the bird's physiology and behaviour being so adjusted that it breeds at those seasons when there is sufficient food available to raise young. The Robin feeds its young primarily on caterpillars, and, in England at least, the breeding-season coincides with the caterpillar harvest, which would account for the rarity of breeding after June, at a time when many species which feed their young on adult insects are still raising families.

Schildmacher (1937) has shown that the gonads of the Continental Robin (*E. r. rubecula*) are stimulated to develop by increased

daylight. Presumably the same applies to the British race (*E. r. melophilus*). Nevertheless, though England and Germany are at the same latitude and experience a day of similar length, the British birds breed nearly a month ahead of their German relatives. This suggests that the light ration critical for the development of the gonads is different for the two races—*i.e.*, that daylength should be regarded as a timing mechanism rather than as a direct physiological stimulus, the nature of the timing mechanism being modified by natural selection so that each race comes into breeding condition at the season when breeding can be successful.

Actually, the British Robin has been found breeding in every month of the year. There is one published record for September, one for October, three for November, three for December, twelve for January, and too many to specify for February (Lack, 1946). That winter nesting does not become common implies that such attempts are usually eliminated by natural selection, and there is good evidence for this, as in fact only three of the above twenty nests were recorded as successful, the September Suffolk nest, a Norfolk pair which raised five young hatched on December 8th, and an Irish pair with fully fledged young on February 7th. Nearly all these winter attempts were recorded during exceptionally mild weather, and in several cases the eggs were deserted when cold followed the mild spell.

SEASONAL VARIATIONS IN CLUTCH-SIZE.

As shown in Table IV, the average clutch of the Robin in England and Wales increases from early March until early June, after which it declines.

TABLE IV. Seasonal Variations in Clutch-size in England & Wales.

Period.	Nests found.	Percentage of nests consisting of					age Combined Clutch.	Aver- age Combined Average
		c/3	c/4	c/5	c/6	c/7		
March 2-17	...	8	[13 ⁰]	[50 ⁰]	[38 ⁰]	—	—	[4.3]
	18-24	24	—	33 ⁰	63 ⁰	4 ⁰	—	4.7
	25-31	51	4 ⁰	29 ⁰	55 ⁰	12 ⁰	—	4.8
April 1-7	...	111	1 ⁰	16 ⁰	67 ⁰	15 ⁰	1 ⁰	5.0
	8-14	157	3 ⁰	13 ⁰	69 ⁰	15 ⁰	—	5.0
	15-21	150	3 ⁰	15 ⁰	61 ⁰	21 ⁰	—	5.0
	22-28	116	2 ⁰	26 ⁰	54 ⁰	18 ⁰	—	4.9
April 29-May 5	111	3 ⁰	17 ⁰	48 ⁰	30 ⁰	3 ⁰	5.1	5.1
	—	—	—	—	—	—	—	—
May 6-12	...	75	1 ⁰	23 ⁰	45 ⁰	27 ⁰	4 ⁰	5.1
	13-19	66	2 ⁰	17 ⁰	48 ⁰	33 ⁰	—	5.1
	20-26	69	3 ⁰	14 ⁰	41 ⁰	38 ⁰	4 ⁰	5.3
	—	—	—	—	—	—	—	—
May 27-June 2	42	2 ⁰	12 ⁰	52 ⁰	31 ⁰	2 ⁰	5.2	5.2
	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—
June 3-9	...	36	—	36 ⁰	42 ⁰	19 ⁰	3 ⁰	4.9
	10-16	25	8 ⁰	24 ⁰	44 ⁰	24 ⁰	—	4.8
	17-23	24	8 ⁰	25 ⁰	54 ⁰	13 ⁰	—	4.7
June 24-Aug. 4	26	4 ⁰	23 ⁰	38 ⁰	34 ⁰	—	5.0	5.0
	—	—	—	—	—	—	—	—

The average size of the clutch in April is about 0.2 egg larger than in March, and about 0.2 egg smaller than in May, but in June and July the average falls again to about 0.1 egg smaller than in

April. A clutch of six eggs is found in about one-third of the clutches completed between April 29th and June 2nd, but in less than one-fifth of the clutches completed at other seasons. Of the 12 records of *c/7* submitted by field observers, as many as 10 occurred between April 29th and June 2nd.

Seasonal variations are rather more marked on the Continent of Europe than in England, as shown in Table V. In Eastern Galicia, the second brood is, on the average, $1\frac{1}{2}$ eggs smaller than the first brood, and German authorities such as Rey (1912) and Bau (1923) quote a similar figure for their country. Whereas in Central Europe and in Scandinavia the second brood is smaller than the first, in England it is larger. However, a similar seasonal variation is involved, clutches being largest in May and early June and smaller before and after this period. The difference is that in England May is the time of the second brood, but in Germany of the first brood.

Actually, the seasonal variation is not quite synchronous in different countries. In England and Wales clutch-size begins to decline in the week starting June 3rd, but in West Central Europe not until the week starting June 10th, and in Scandinavia not until the week starting July 1st, a month later than in England.

TABLE V. Seasonal Variations in Clutch-Size in other Regions.

A. Northern Europe (Norway, Sweden, Finland, Estonia, Denmark).

Period.	No. of nests consisting of									Combined Average
	<i>c/3</i>	<i>c/4</i>	<i>c/5</i>	<i>c/6</i>	<i>c/7</i>	<i>c/8</i>	<i>c/9</i>	Total	Average	
April 29-May 12	-	2	5	9	9	1	-	25	6.1	6.1
May 13-26 ...	-	1	8	29	22	2	-	62	6.3	
May 27-June 9	-	-	8	13	21	1	1	44	6.4	
June 10-30 ...	-	-	7	8	16	-	-	31	6.3	
July 1-21 ...	-	1	5	3	2	-	-	11	5.5	5.5

B. West Central Europe (Germany, North and Central France, Switzerland).

April 1-14 ...	--	2	-	1	-	-	-	3	[4.7]
15-28 ...	1	-	3	6	4	-	-	14	5.9
April 29-May 12	1	3	8	16	11	-	-	38	5.9
May 13-26 ...	-	-	9	12	7	-	-	28	5.9
May 27-June 9	-	-	3	4	3	-	-	10	6.0
June 10-30 ...	-	2	7	5	1	-	-	15	5.3
July 1-21 ...	1	2	-	1	-	-	-	4	[4.3]

C. Eastern Galicia and Carpathians.

May	-	-	6	15	6	-	-	27	6.0
June 20-July 10	-	4	5	-	-	-	-	9	4.6

D. *Rothiemurchus* (Inverness-shire).

Mar. 27-Apr. 28	1	1	11	11	1	-	-	25	5.4
April 29-June 9	-	1	7	14	3	-	-	25	5.8
July 1-Aug. 16	-	2	2	-	-	-	-	4	[4.5]

Seasonal variations are also shown by comparing successive layings of the same hen, the latter being identified either by

a coloured ring, or by a characteristic egg pattern, or by using the same nest twice. In Table VI it is shown that, for successive layings in the same season, a hen Robin lays a clutch of different size more often than not. The later clutch is usually the larger of the two when the first clutch is in March or April, and the smaller of the two when the later clutch is in June or July.

TABLE VI. Successive Layings of same Hen in same Year.

	<i>Earlier laying late March-April</i>	<i>Earlier laying late April-May</i>
	<i>Later laying late April-May</i>	<i>Later laying June-July</i>
No difference in clutch size	...	11 cases
1 more egg in later laying	...	7 ..
2 more eggs in later laying	...	1 ..
3 more eggs in later laying	...	1 ..
1 less egg in later laying	...	2 ..
2 less eggs in later laying	...	—
AVERAGE DIFFERENCE BETWEEN EARLIER AND LATER LAYING	...	+ 0.45 - 0.47

NOTE.—Of the above cases, 29 were in England, 8 in Scotland, 1 in France, 1 in Holland and 1 in Germany.

VARIATION WITH THE WEATHER.

It is widely believed that clutches tend to be larger in warm fine springs and rather smaller in cold wet seasons. This point requires further investigation, and should there be a cold spell in the spring of 1946, readers are asked to make a special effort to find Robins' nests completed during it; any clutches found already laid up should be re-visited to fix the date of hatching, and so of laying.

In England and Wales, March and April, 1945 was the finest and warmest spring since 1893, until terminated by a cold spell at the end of April. The data in Table VII suggest that the clutch-size of the Robin was above average. On the other hand, W. M. Ross writes that May, 1945 was abnormally cold in the Rothiemurchus region (Inverness-shire), and May Robin clutches seem to have been below average. Three correspondents submitted suggestive evidence of clutch variations in other years, added as a footnote to Table VII. The problem of whether these results show a significant correlation between clutch-size and weather is better deferred until the 1946 results have been analysed.

TABLE VII. Comparison of 1945 with other Years.

A. All records March 18-April 28 for England South of Wash.								
	Percentage of clutches consisting of						Average Clutch	Difference.
	c/3	c/4	c/5	c/6	c/7	Total		
1945 ...	...	1%	6%	70%	23%	—	97	5.14)
All other years	3%	23%	61%	13%	0.4%	266	4.85)	+ 0.20

	All records April 29-June 9, 1945 for Rothiemurchus (Inverness-shire).							Average Difference.
	No. of clutches consisting of	c/3	c/4	c/5	c/6	c/7	Total Clutch	
1945	—	1	4	1	—	6	5.0}
1933-1944	...	—	—	3	13	3	19	6.0}

In Essex in the cold spring of 1926, an unusually high proportion of Robins were sitting on c/4 (J. H. Owen). In Norfolk in the two cold spells of the spring of 1943, around April 24th and May 10th, A. McLean found 4/4, 1/5 and 0/6, which is well below average for the Robin. In South Devon April 22nd-28th, 1942, R. A. W. Reynolds found 1/3, 6/4 and 1/5, an average of one egg below normal; there was no abnormally cold spell, but the phenological report of the Royal Meteorological Society shows that April, 1942, was unusually backward, perhaps due to drought, after a cold winter (information from Maj. H. C. Gunton). The above cases are based on too few nest records to be regarded as more than suggestive.

INDIVIDUAL PECULIARITIES.

As clutch-size varies somewhat with the weather, it would not be expected that a particular Robin would lay a clutch of exactly the same size every year, though it might be expected that there would be a general tendency in this direction. Only four records were submitted of layings of the same hen in different years, three of these birds laying clutches of the same size.

TABLE VIII. Layings of same Hen in successive Years.

Locality.	Observer.	Date of laying.		Size of Clutch.	
		1st year.	2nd year.	1st year.	2nd year.
Somerset	S. Lewis	7.V	6.V	6	5
Middlesex	J. E. Roberts	7.VI	30.V	4	4
Surrey	N. B. Coltart	26.IV	28.IV	4	4
Ayrshire	N. B. Coltart	31.V	29.V	6	6

That individual peculiarities tend to persist is suggested by a record from H. R. Biggs of a Robin in Kent which laid the unusually small clutch of three eggs for each of its three broods in 1945, on March 31st, May 14th and June 18th respectively.

REGIONAL VARIATIONS IN CLUTCH-SIZE.

The average clutch of the Robin differs in different parts of its range. This is associated in part with a difference in breeding-season in different places, but the statement remains true for clutches laid at the same date. Average clutch-size is summarized in Table IX for the period April 15th-June 9th. It would have been preferable to analyse the data for a more restricted laying period, but this would not have provided a sufficient number of nest records for many of the countries concerned.

There are two main trends of regional variation in clutch-size. First, clutch-size increases from south to north. The average clutch is 4.2 in North Africa, 4.9 in Spain and Portugal, 5.9 in North France and Germany, and 6.3 in Finno-Scandia. Secondly, clutch-size increases from west to east. The average clutch is 5.1 in England & Wales, 5.7 in Holland, 5.9 in Germany and 6.0 in

TABLE IX. Regional Variations in Clutch-size.
(for period April 15th—June 9th).

Region.	Field observa- tion or collected clutch.	No. of Clutches consisting of								Total.	Average Clutch.	Com- bined Average.
		c/2	c/3	c/4	c/5	c/6	c/7	c/8	c/9			
Norway.	field.	—	—	—	—	5	1	—	—	6	6.2	
Sweden.	mixed.	—	—	2	9	22	20	3	1	57	6.3	
Finland.	mixed.	—	—	1	10	17	22	1	—	51	6.2	6.3
Estonia.	coll.	—	—	—	—	5	5	—	—	10	[6.5]	
Denmark.	coll.	—	—	—	2	2	4	—	—	8	6.3	
Holland.	coll.	—	1	2	15	22	6	—	—	46	5.7	
Eastern Galicia.	field.	—	—	—	6	15	6	—	—	27	6.0	
Germany.	field.	—	1	1	12	26	12	—	—	52	5.9	
Switzerland.	mixed.	—	1	1	4	6	7	—	—	19	5.9	5.9
N. & Central France.	coll.	—	—	1	9	10	8	—	—	28	5.9	
Basse-Bretagne.	?	—	—	—	41%	57%	—	2%	—	—	?	5.6
Channel Isles.	field.	—	2	2	17	3	1	—	—	25	5.0	
Rothiemurchus (N. Scotland).	field.	—	1	1	11	17	4	—	—	34	5.6	
England & Wales.	field.	—	14	128	338	174	11	—	—	665	5.1	
Azores.	coll.	—	3	4	11	4	—	—	—	22	4.7	
Spain & Portugal.	mixed.	—	—	2	5	1	—	—	—	8	4.9	
North Africa.	coll.	—	3	6	6	—	—	—	—	15	4.2	
Canary Islands.	coll.	1	9	4	3	—	—	—	—	17	3.5	

For completeness, a few records for other countries are set out below :—

Rumania 3/5, 2/6, 2/7, i.e. about the same as in Eastern Galicia.

Savoy (Bailly, 1853) and *Provence* (L'Hermite, 1922) normally 5-6, i.e. smaller than in Northern France.

Corsica. Usually c/4 (R. F. Meiklejohn *in litt.*) ; 1/2, 1/4 (de Chavigny coll.), 3/5 (Jourdain coll.), the last probably selected.

Madeira 1/3, 1/4, 1/5.

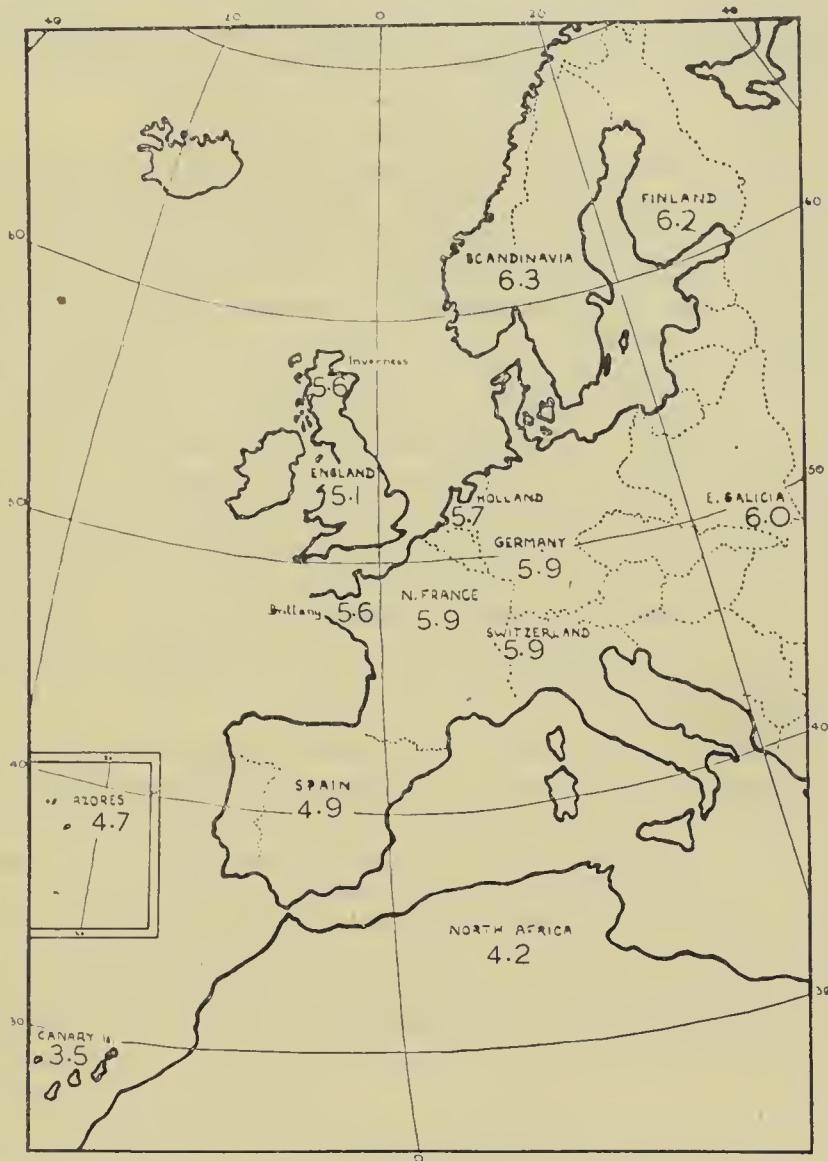
Palma (Canary Is.) 1/4.

Persia and Caucasus 1/4, 2/5, 2/6.

The information in Table IX is based on dated clutch records except for a general statement by Lebeurier and Rapine (1936) for Basse-Bretagne, evidently based on a large but unspecified number of clutches. The second column of the table shows whether the records were mainly by field observers (probably reliable) or mainly from collections (perhaps too high an average because selected).

The figure for the Canary Is. refers to the race *superbus* on Gran Canaria and Tenerife, and is doubtful. Meade Waldo (1893) considered the usual clutch 2 or 3, occasionally 4 ; he collected at least 1/2 and 6/3, with a further c/3 quoted by Bannerman (unpub.). On the other hand, the collected clutches from all other sources comprise 3/3, 4/4, and 3/5, an average of one egg higher. Some of the latter were purchased, so may have been made up artificially to large figures to increase their cash value. There may be a similar discrepancy in the Azores data, as Hartert and Ogilvie-Grant (1905) recorded 2/3 and no others, but de Chavigny (*in litt.* amplifying de Chavigny and Mayaud, 1932) obtained only 1/3 in 19 clutches purchased from the islands, all other clutches being higher ; Correia obtained 1/5 and 1/6 (Murphy and Chapin, 1929).

Eastern Galicia, which are all at about the same latitude. In part, this latter trend reflects a tendency for average clutch-size to be smaller on islands than on the Continent. Thus the average is about 5.0 in the Channel Islands, but about 5.6 on the adjoining coast of Brittany. Again, Col. R. F. Meiklejohn writes that *c/4*



Regional variations in average clutch-size of the Robin.

is the usual clutch in Corsica, but in Spain and Portugal, at about the same latitude, it is roughly 4.9 and in Provence (a little further north) L'Hermite (1922) gives a figure of 5.6. (These latter figures all need corroboration). The average clutch of the Robin is smallest in the Canary Islands and largest in Finno-Scandia, being about 80 per cent. larger in the latter than the former.

Within the British Isles, the average clutch between April 15th and June 9th is 5.6 in Rothiemurchus (Inverness-shire, North Scotland), as compared with 5.1 in England and Wales. The data also suggests that the average clutch may be smaller in the southwest peninsula of Cornwall, Devon and Somerset than in the rest of England, but are not yet sufficient to justify detailed comparisons of different parts of Britain, and this problem is deferred until the 1946 results have been received. Further data are also needed for Ireland.

FACTORS AFFECTING CLUTCH-SIZE.

The south-north and the west-east trends of increasing clutch-size, also the seasonal variation, are paralleled in many other European birds, though not in all. Detailed discussion of the significance of clutch-size is deferred to the *Ibis* paper. It is there maintained that the clutch-size of nidicolous species is ultimately determined by natural selection operating on brood-size, that many of those individuals laying clutches higher than normal fail to collect enough food to raise their young, and so leave fewer descendants than the individuals with clutches of normal size. As yet, the evidence for this is mainly circumstantial. It accords with the fact that clutch-size tends to increase with increasing daylength, since with a longer day the parents can usually bring more food to the nest per day, and so can raise more young at one time. In the Robin, as already noted, clutch-size increases both with increasing latitude (and hence with increasing daylength), and with the season up to June, after which it declines (as does the daylength).

The amount of food which the parents can collect for their young per day depends, of course, not only on the daylength, but on the quantity of available food, and the latter may be expected to differ in different parts of the breeding range. A difference in quantity of food is perhaps the reason why English Robins have a smaller average clutch than German Robins breeding at the same season and at the same latitude. However, the implied greater abundance of caterpillars in Germany than England requires investigation.

That daylength is not the sole factor affecting clutch-size is also shown by the fact that the seasonal variations are not precisely proportionate to the changes in daylength. For instance, in England the average Robin clutch shows a fairly sharp decrease in early June. Clutches completed then would be hatched a fortnight later, and the young would reach the critical second week in the nest, when they require most feeding, about June 21st. Daylength begins to decrease at this time, but much more gradually than the drop in average clutch-size. It may provisionally be suggested that in an average year the supply of caterpillars begins to decrease about June 21st. In the Oxford region, the Robin feeds its young mainly on the caterpillars of the Winter Moth, *Chæmatobia brumata*. M. K. Colquhoun (*J. Anim. Ecol.*, in press)

informs me that a census of Hazel leaves in a Berkshire copse in 1939 showed that *brumata* larvae reached their peak about the end of May, and declined sharply in numbers about the second week in June. This is a little earlier than predicted above, but in 1939 the month of May was unusually warm and forward.

In Germany, at about the same latitude as England, the average clutch-size begins to decrease about a week later than in England, suggesting that the caterpillar supply may also fall off a week later than in England. In Scandinavia, clutch-size appears not to decrease until July 1st, suggesting that in an average year, caterpillars are numerous until about July 21st. These speculations require checking.

Although daylength is not the only factor involved, it would seem to be one of the most important in determining the survival value of a particular brood-size, and hence clutch-size. It does not, of course, follow that daylength affects the physiological mechanism of clutch-termination. The distinction must be kept clear between the ultimate factors concerned with survival value, and the proximate factors affecting physiological processes. There is suggestive evidence that unusually low temperatures cause a decrease in the spring clutch-size of the Robin, while Kendal (1941) has suggested that, in the House Wren (*Troglodytes aedon*), the decrease in clutch-size in late summer is correlated with high temperatures. Hence *on the physiological plane*, temperature might be a major factor affecting the seasonal variations in clutch-size, even though daylength is probably the major factor affecting the survival value of such variations. The proximate or physiological causes of the regional variations in clutch-size in the Robin await investigation. Temperature is possibly important, and it is also possible that there are hereditary differences between the Robins of different regions.

Even at the same season and in the same place, every Robin does not lay a clutch of the same size. There is individual variation between rather small limits, which suggests that natural selection may not always favour the same size of brood. This seems reasonable, in view of the variations in spring weather and their effect on insect abundance and availability, and evidence is given in the *Ibis* paper that in fact the number of young which a bird can raise differs on different occasions.

(*To be continued*).

BREEDING OF THE BLACK REDSTART IN BRITAIN: A CENTURY-OLD RECORD

BY

GEORGE W. TEMPERLEY.

IN 1916, seven years before T. A. Coward found the Black Redstart (*Phoenicurus ochrurus gibraltariensis*) breeding on the Sussex coast and so established what was then thought to be the first British record, F. C. R. Jourdain wrote an article in *The Zoologist* on the status of the Black Redstart in England as a breeding species. In that article he reviewed every alleged instance of breeding that had been reported up to that date and showed that in every such case an error in identification had been made—"with the possible exception of Hancock's . . . which however requires confirmation before it can possibly be accepted." Hancock's record here referred to was published in 1874 in his *Catalogue of the Birds of Northumberland and Durham* and reads as follows:—"In 1845, a pair [of Black Redstarts] nested in the garden of the late Rev. James Raine, the historian of Durham, in that City; and I am indebted to Mr. Wm. Proctor for their nest, which is now in my collection. An egg belonging to it was kindly presented to me by the Rev. James Raine, son of the above named gentleman."

William Proctor, who gave the nest to Hancock, was the curator-taxidermist of Durham University Museum. He had already published the record himself, for in a "List of Birds found in the County," published as an Appendix to the Rev. G. Ornsby's *Sketches of Durham*, in 1846, he had written thus of the Black Redstart—"Very rare; a nest with five eggs was taken near Crook Hall in the summer of 1845." It will be noted that this was written just one year after the event and twenty-eight years before the publication of Hancock's "Catalogue."

Additional details of the occurrence are to be found in a chapter by Canon H. B. Tristram, F.R.S., of Durham, the eminent ornithologist and traveller, on the "Birds of the County of Durham" in *The Victoria County History of Durham*, published in 1905. Here he wrote—"In the year 1845 a pair [of Black Redstarts] built their nest on a cherry tree trained on a wall in the garden of the Rev. Dr. Raine, at Crook Hall, in the suburbs of Durham City. I regret to say that the birds were shot. The male is in the Durham Museum; the nest and an egg were given to the late John Hancock."

Further evidence is forthcoming from a letter to the late George Bolam from Canon William Greenwell of Durham, then in his 96th year, who had known both Canon Raine and Canon Tristram. It is dated "Durham, Jan. 11th, 1917" and reads—"I well remember the late Canon Raine, son of Dr. Raine, the historian of North Durham, when a boy at the Grammar School, finding the nest of the Black Redstart at Crook Hall, close to Durham, where his father lived. I have forgotten where the bird, its nest and egg went to.

I find however that the bird is in the Museum of the University here, which is now in a very hopeless condition."

Efforts to trace the bird or birds have proved fruitless. The Durham University Museum collections were dispersed and such of the birds as had not already fallen to pieces from neglect were scattered. The nest and one egg, however, are still in the Hancock Collection in the Hancock Museum at Newcastle-on-Tyne. The nest, which is typically that of the Black Redstart, though its situation, if correctly recorded, was certainly unusual, bears this label—"Black Redstart's nest taken in the neighbourhood of Durham about 12 years ago. Presented by W. Proctor, 14th June, 1855." The egg, which is also typical of the species, bears this inscription in Hancock's writing—"Black Redstart taken near Durham some years ago. Prestd. Rev. - Raine, 1855." It is evident that when Hancock wrote these labels in 1855, he did not know the exact date or place where the nest had been taken; but by 1874, when he published the "Catalogue," he had obtained fuller information.

The nest and egg have recently (February, 1945) been sent to the British Museum (Natural History) to be critically examined. The Hon. Guy Charteris, who saw them, considers that they are undoubtedly those of the Black Redstart. His comment on the nest is that it could not be that of any other bird. Thus an old record is definitely confirmed.

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STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

III. THE CIRL BUNTING.

Photographed by GEORGE YEATES.

(Plates 15-16).

THIS local species (*Emberiza cirlus*) is one of the comparatively small number of birds regularly breeding in the British Isles which may still fairly be classed in the present category.

Some earlier observers concluded that only the female tended the young, but at nests observed by Mr. Yeates the male very frequently did so at all stages, but especially during the first three days, and Col. B. H. Ryves in Cornwall found that the young were fed equally by both sexes throughout. The photographs were taken at two different nests in Somerset in 1936 and 1939 respectively. That of the pair together at the nest is of particular interest.

The plates, particularly plate 15, bring out very clearly the striking head pattern of the male, but the brown, not chestnut, rump which mainly differentiates the female from the female Yellowhammer, cannot be illustrated in photographs.

Though mainly confined to the South of England the present range of the Cirl Bunting on the west side of Great Britain extends to the north coast of Wales, and a tendency to a local extension of range in several areas has been noted recently, breeding having been recorded in Lancashire and Leicestershire (*antea*, Vol. xxxviii, p. 212) and birds reported in the breeding-season in Nottinghamshire (*id.*, p. 274).

LESSER WHITE-FRONTED GOOSE.—*Correction.*—In the notes in this series on p. 80 the record of the Lesser White-fronted Goose shot in Northumberland in 1886 was inadvertently attributed to the late Abel Chapman instead of, as it should have been, to Alfred Chapman, his brother.



CIRL BUNTING (*Emberiza c. cirlus*), MALE AT NEST: Somerset, 1939.
(Photographed by George Yeates).



CIRL BUNTING (*Emberiza c. cirlus*), PAIR AT NEST: Somerset, 1936.
(Photographed by George Yeates).

NOTES ON THE FOOD OF THE KESTREL

BY

J. C. S. ELLIS.

THE following information has been gathered as the result of analyses of 206 pellets of the Kestrel (*Falco t. tinnunculus*) collected at regular intervals between July 1st, 1944, and March 24th, 1945, from a roost in an old shed and are believed, from feathers found beneath the roost, to be very largely from the male bird.

The immediate vicinity of the roost in the Dearne valley (Yorks., W. Riding) comprises agricultural land, both grass and arable, and a considerable area of parkland, two streams and about 50 acres of ornamental water, besides mixed deciduous woodland consisting mainly of beech and oak. The grassland was originally of the rougher type, but recent re-seeding has brought about a change in texture, the newer grass being generally thinner and with an absence of *Luzula campestris*, which was formerly a feature of some of the older pastures.

	Field-Vole (<i>M. agrestis</i>)	L-t. Field-Mouse (<i>A. sylvaticus</i>)	Com. Shrew (<i>S. araneus</i>)	Water-Shrew (<i>N. fodiens</i>)	Frog (<i>R. temporaria</i>)	Birds	
July 29th. 35 pellets ..	23	-	2	-	-	-	
August 26th. 19 pellets ..	10	-	1	-	-	1	Gizzard lining.
September 30th. 8 pellets ..	3	-	-	-	-	-	Beetles present in all pellets except with bird remains.
October 28th. 6 pellets ..	1	-	1	-	-	-	
November 25th. 12 pellets ..	4	-	1	-	-	-	
December 23rd. 21 pellets ..	7	1	1	-	-	1	
January 20th. 17 pellets ..	12	2	-	-	-	1	
February 25th. 28 pellets ..	5	2	1	1	1	8	+ 1 pellet of quill bases.
March 24th. 60 pellets ..	36	2	2	1	-	2	
	101	7	9	2	1	13	

The size of the pellets is from 45-20 mm. in length with a diameter of 17-10 mm., the average being 33 x 14 mm., and they are usually

recognizable from those of the Little Owl (*Athene noctua vidalii*) by their "tail" and slight curve along the long axis, but shape alone is an unsatisfactory criterion as both features may be lacking in the hawk while present in the owl. In those of the owl the upper and lower jaws of small rodents are frequently in their correct relative positions, but in the Kestrel this seems to be unusual and quite frequently teeth are found separated from the jaws in the enclosing fur, whilst the bone shows a yellowish stain not observable in the owl pellets. The typical pellet of the Kestrel is also much more firmly compacted, and in consequence holds together better, except when the beetle content is high.

It is in my experience uncommon to find the remains of more than one vole in a pellet, but a shrew is usually accompanied by at least part of a vole or mouse. Beetles, however, frequently accompany all three, but appear to be exceptional in bird pellets, whilst pellets consisting almost entirely of fur with very low beetle content are fairly frequent.

Owing to the bird's habit of devouring at least some part of the teeth and jaws of its rodent victims, their determination has proved comparatively easy, but when small birds form the prey, the skull and legs are apparently refused and the remaining bones, being long, are much broken, so that correct identification has been impossible, the feathers being very thoroughly comminuted—but in a few pellets the presence of the gizzard lining together with items of the victim's last meal such as grains of wheat have been the means of determining the presence of bird remains.

Rodent fur shows a remarkable range in the degree of its comminution, varying from almost dust to large tufts still retaining a considerable amount of its original colour, nor does this variation show any seasonal change, both extremes being found in summer and winter.

The presence in one pellet of a mass of quill bases was an apparent departure from the normal, caused perhaps by the extreme cold then prevailing, as judging from other bird pellets all tail and wing quills are removed prior to the meal.

A definite rise in beetle content occurred in the September and October pellets, but so far as I was able to tell, the species remained substantially the same—*Geotrupes* sp. A single earwig was found early in November.

The effect of the weather on the bird's diet is shown in the accompanying table, in which from summer to winter, so long as conditions remained open, the Field-Vole (*Microtus agrestis*) is shown to be the main prey, but with the onset of the cold spell early in 1945, for a time birds were definitely the main item of food, though thorough comminution prevented their remains being identified except in the vaguest of terms.

The appearance of a frog in a pellet at this season is worthy of note, as not only was the ground snow-covered but the frost was extreme. How the bird got it must remain a mystery.

The increase in the number of pellets in March may be assigned to several factors. First there is the possibility of the roost being shared by another bird ; the unusually mild weather would encourage the early formation of pairs. Secondly, while the low totals of September and October may indicate a tendency to autumnal wandering, the high figure in March together with an increasing food supply may show growing attachment to territory.

The appearance of two birds in the March sample may show a selective tendency on the part of the bird for avian prey resulting from experience gained in the hard weather, but be this as it may, a Kestrel was shot while harrying a partridge at the end of March, since which time the roost has been deserted.

NOTES.

JACKDAWS VISITING NEST HOLES IN AUTUMN.

In the autumn of 1945 I have noticed Jackdaws (*Corvus monedula spermologus*) frequenting two holes in different beeches close together, at Westerham, Kent, but have been unable to prove definitely that they were breeding.

A Jackdaw was seen to leave one hole on eight occasions between September 6th and 26th, and on October 9th I saw two Jackdaws go into the same hole, one soon after the other. On September 6th, 21st and 24th one came out of another hole ; and on October 3rd a Jackdaw flew out with what looked like a tuft of dry grass in its beak. Jackdaws apparently emerged from both these holes on various other occasions during September and October, and a small number of these birds showed a marked preference for perching in the trees containing the holes in the same period. They also perched frequently in another beech not far away. In the same neighbourhood a Jackdaw was seen to leave a hole in a large ash on September 29th.

K. R. CHANDLER.

[Jackdaws have been recorded visiting nest holes in November and December (cf. Morley, *Ibis*, 1943, p. 139), but this can be regarded as due to early beginnings of the regular sexual activity of spring. The definitely autumnal date of the behaviour above described is of interest, even though breeding was not proved. It should, however, also be mentioned that Jackdaws have recently been recorded searching Rooks' nests in winter, apparently for insects (*Hastings and East Sussex Naturalist*, Vol. vi., p. 160), and the possibility that they might be led to visit their own nests, or those of their own species, for a similar purpose cannot be excluded.—Eds.]

COURTSHIP PRESENTATION BY STARLING.

ON the afternoon of April 3rd, 1938, at Morden, Surrey, a Starling (*Sturnus v. vulgaris*), carrying some wood shavings in its bill, ran across the lawn towards another bird, presumably a female, and "presented" the bundle. The first bird then dropped the shavings and "mounted" the female. The male then picked up the nesting material again and ran about in an excited manner for a few moments and flew off, followed by the hen.

G. BEVEN.

DISPLAY OF NUTHATCH IN WINTER.

DURING the winter two Nuthatches (*Sitta europaea affinis*) fed from scraps outside our windows at Bishop's Waltham, Hants. They were most bold and voracious. On December 1st, 1945, a fine, mild morning, one was pecking at fat wired to a tree and the other bird landed on the same branch and approached with fanned wings and tail outspread so that the white spots were exposed. Is display unusual in winter ?

F. COLTART.

[In cases of this type it is natural to enquire whether the display may not have been aggressive rather than sexual, but it

may be noted that L. S. V. Venables (*antea*, Vol. xxxii, pp. 31-2) found that in aggressive displays towards a stuffed mount the tail was not spread as in the sex display.—EDS.]

“INJURY-FEIGNING” OF NUTHATCH.

ON April 19th, 1945, I flushed a hen Nuthatch (*Sitta e. affinis*) from the nest in an apple tree. The bird immediately dropped like a stone to the base of the tree and ran between my legs with its wings spread open and drooping to the ground. It carried on running in this seemingly injured manner into a bed of nettles a few feet behind me. I cannot find any previous record of the Nuthatch feigning injury when flushed from the nest.

G. E. TOOK.

DISPLAY OF SPOTTED FLYCATCHER.

I WAS interested to see the notes concerning the display of the Spotted Flycatcher (*Muscicapa s. striata*) (*antea*, Vol. xxxviii, p. 333), for I have myself observed a similar display.

In May 1945, at Ware, Herts., I observed a hen bird perched upon a bare twig, with the male a few inches away. The male appeared to be bowing, for his beak was almost touching the twig, and he was flapping his wings with a rotary movement. The hen appeared to take no notice of the proceedings, although the male repeated his actions two or three times. After this the cock was often observed chasing the hen, at the same time uttering his rather feeble song.

E. V. WILFORD.

RED-BREASTED FLYCATCHER IN LANCASHIRE.

ON October 4th, 1945, a warm, sunny day, I watched for some ten minutes a male Red-breasted Flycatcher (*Muscicapa p. parva*), in a woodland clearing at Mytton Hall, N.E. Lancashire.

The bird was first seen in flight, possibly having been disturbed by a noisy flock of Rooks which alighted in a line of tall oak trees a short distance away. As it flew past me within a few feet I caught a glimpse of a reddish breast, and as the bird turned to alight it showed a brown back and white edges to a blackish tail. On its perch in the bough of an oak its colours were somewhat hidden by the foliage, but it made a flicking movement of the tail, revealing white patches on each side but not extending to the tips of the feathers. For a few minutes the bird moved about among the leaves like a warbler and then made a second sweeping flight across the clearing to a tall ivy-covered elm. Here the specific characters were again well seen, with the addition of a clear view of its pale underparts and red breast. Also, it again confined its activities to moving about among the foliage in leaf-warbler fashion; no flycatching sallies after insects were observed. After a few minutes it disappeared and was not seen again, but its small size, colouring, and characteristic flight-actions made the identification certain.

This is the first occurrence of the Red-breasted Flycatcher in Lancashire.

CLIFFORD OAKES.

WILLOW-WARBLER USING THREAT-DISPLAY TO ARTIFICIALLY PRODUCED CUCKOO-NOTE.

DURING a recent spring, I was anxious to show my small son a Cuckoo close to, so we went to a small coppice and concealed ourselves beneath a hawthorn bush near an isolated oak tree. A cock Willow-Warbler (*Phylloscopus t. trochilus*) was singing in a neighbouring bush, but took no notice until I began to call the Cuckoos up by the usual method of blowing through the clasped hands. The Willow-Warbler immediately stopped singing and flew to the top of our bush, uttering a queer chittering note which I had never heard from this bird before. I kept up my "cuckoo-ing", and motioned my son to keep still, when the Willow-Warbler flew to a spray only six inches from my face, fluffed all its neck feathers, raised the feathers on its crown, waved its wings to and fro, and with a wide gape, uttered a long hissing sound. I kept blowing the cuckoo-note and the bird got more and more excited until I thought it was going to attack, but after a few moments it relaxed, returned to its original song post, and recommenced singing. I could not get it to repeat the performance. STUART SMITH.

INCUBATION AND FLEDGING PERIOD OF OLIVACEOUS WARBLER.

ON June 7th, 1945, I was shown the nest of an Olivaceous Warbler (*Hippolais p. pallida*) in a garden situated beside the Sweetwater Canal on the western side of the Great Bitter Lake, Egypt. The nest was a neatly rounded cup of interwoven grass and feathers situated in a grape vine about five feet from the ground, and contained three eggs, dull white with black spots and greyish blotches. (Mr. R. Scopes informed me that when he discovered the nest on June 1st it contained one egg).

During the whole of the incubation period the hen was a very loose sitter, and usually left the nest on its being approached; she was not actually seen on the nest until June 10th.

Two newly hatched young were in the nest on June 16th, when the third egg was missing. The two young birds left the nest on June 27th. This gives a probable incubation period of 13 days, and a fledging period of 11 days, as compared with the 13 days and 15 days respectively given in *The Handbook of British Birds*.

S/Ldr. K. L. Bodenham gives an incubation period of 13 days and a fledging period of 12 days for a nest he had under observation at El Ballah (*Bulletin of the Zoological Society of Egypt*, No. 7, p. 30). C. J. GENT.

[It should perhaps be noted that whereas the fledging period quoted in *The Handbook* (which is only given rather tentatively as "probably about 15 days") refers to the Egyptian race, the incubation period refers to the Balkan *H. p. clœica*, though, no doubt the periods do not differ in the races.—EDS.]

JUVENILE ROBIN SINGING IN JUNE.

THROUGHOUT the afternoon of June 23rd, 1945, in my garden at Englefield Green, Surrey, a young Robin (*Erithacus rubecula melophilus*) with only a faint tinge of red on its otherwise speckled breast, was singing loudly, and persistently chasing another adult Robin, which, although it continually gave the usual ticking alarm-note, did not sing once.

By the following day, the fledgling had apparently succeeded in occupying its territory, for while the adult was seen only a few times, the former was singing in or around the garden all day.

Both Lack (*Life of the Robin*, p. 48) and *The Handbook* give even the commencement of juvenile song as occurring not before late July; but this bird, probably one of an early brood, had taken up a territory and was in full song by the beginning of the last week in June.

D. J. MAY.

COURTSHIP FEEDING OF HOOPOE.

ON March 25th, 1945, a pair of Hoopoes (*Upupa epops major*) alighted on the wire fence of a compound in Cairo. The cock flew to the ground and commenced foraging, whilst the hen remained in a rather hunched posture, occasionally uttering a peculiar note, something between a twitter and a hissing screech, with a disjointed, broken effect. After some minutes the cock unearthed a large grub (a species resembling a huge mealworm in appearance) and, carrying it in the tip of his bill, flew up and alighted on the barbed wire about two feet away from and in front of the hen. She, with fluttering wings and fully erected crest, uttered an eager, louder version of her former notes, whilst the cock erected and lowered his crest, and bowed twice with crest depressed. At this point the hen flew to him; he gave her the grub and, as she swallowed it, flew off and alighted in a cultivated area about 100 yards away. After about ten minutes he returned with some insect I could not identify and after a similar ceremony gave it to the hen, who had not left her perch. They then flew off to the cultivation.

I particularly noticed that this bird when feeding young appears never to bring more than one insect at a time, always carried in the extreme tip of the bill, even when, as is the case with those that nest in the centre of Cairo, the parent has to fly some way to its feeding grounds.

DEREK GOODWIN.

ROLLER IN LONDON COUNTY IN JANUARY.

ON January 31st, 1945, from an upper window of the Kent office of the Metropolitan Water Board at Deptford, three colleagues and I observed a bird of most unusual appearance perched on a post on the left bank of the River Ravensbourne, which here flows through the works and under the office windows. Its unusual and striking colouring, which had first attracted attention to it, caused us to observe it carefully, and it remained long enough for us to do so

before it flew off in a southward direction, with a distinctive upward swoop. The head and shoulders were greenish blue and the rest of the upper-parts chestnut, with black tips to the wings. The tail, which was spread like a fan when it took off, was dark in the centre with light sides. It was perched all the time with its back to us, so that we never got a front view. It appeared to me at the time to be about the size of a Rook, but as I afterwards found that the distance from the window to the post was less than I had supposed I probably over-estimated the size. The range at which the bird was seen was in fact about 50 ft.

Subsequent reference to *The Handbook of British Birds* confirmed the conclusion I had been led to by E. Fitch Daglish's *Name this Bird*, that, is spite of the unlikely date, the bird was a Roller (*Coracias garrulus*). The plate in *The Handbook* agreed exactly with what we saw.

H. S. KERLEY.

[We are indebted to Mr. R. W. Hale for bringing this record to our notice, and we have been at some pains to investigate it. It is clear that the bird seen could have been nothing else but a Roller. There is a Norfolk record for February, 1824, and a more recent one of a bird seen in Hertfordshire on February 6th, 1932 (*antea*, Vol. xxv, p. 335). The occurrence of a Roller in England at such a date, just after a severe cold spell, is most extraordinary, but under war-time conditions it seems very unlikely to have been an imported bird, notwithstanding that the odd situation in which it was seen might seem to suggest that it was one. Mr. Witherby suggested that the Hertfordshire bird might have wintered in Northern Europe, but we are not aware that such wintering has ever been proved.—Eds.]

SNOWY OWL IN KIRKCUDBRIGHTSHIRE.

HAVING been informed that a "large white owl" was appearing every evening over a stretch of marshy ground near Auchencairn, Kirkcudbright, towards the end of April, 1945, I set out to investigate, with considerable scepticism as to the accuracy of the report. Just after sundown on May 2nd, 1945, while concealed in the vicinity of the bird's beat, I succeeded in identifying it as a Snowy Owl (*Nyctea scandiaca*). When first observed, it was quartering the ground some distance away, and then it alighted on a low gate-post, 200 yards distant, where I could observe it through a telescope. Unfortunately the waning light made accurate observation impossible, but I could detect no trace of marking either on the white of the breast or the upper parts. The bird then flew past me low down and only 15 yards away, when very faint markings could be seen on the back, but none on the breast. The large size of the bird, the extensive wing-span, and the strong slow wing-beat were particularly noticeable. Next evening I stationed myself near the gate-post; on this occasion, although the bird appeared again, it failed to perch, but in better light I was able to verify the previous day's observations. I am familiar with the Barn-Owl

(*Tyto a. alba*) and have no doubt that this was *Nyctea scandiaca*, probably a male. E. T. VERNON.

[Other records of Snowy Owls in Great Britain in 1945 were published in Vol. xxxviii, pp. 374-5.—EDS.]

KESTREL CAPTURING A BIRD IN FULL FLIGHT.

On the afternoon of December 19th, 1945, whilst in our garden at Bishop's Waltham, I glanced up to see a small bird flying overhead and noted perhaps five feet above it a hawk which at that instant darted and seized the small bird in its talons and descended gyrating to earth. It appeared that the two birds had their feet interlocked and the small bird swung about screaming during the descent and continued to cry after they landed on some rough ground close to a stream and about 20 yards from where I stood. I ran down to investigate, but the hawk flew across the stream.

I followed and easily located him from the fuss and noise made by a party of Long-tailed Tits in the willows. He then flew off with the prey still in his talons, and I distinctly saw slate blue tail and rump and chestnut back and wings. The bird was clearly a male Kestrel (*Falco t. tinnunculus*), but referring to *The Handbook of British Birds* I read that "adult birds are rarely, if ever, captured in full flight" by Kestrels. F. COLTART.

MARSH-HARRIER IN SOUTH OF ENGLAND IN BREEDING-SEASON.

On May 6th, 1945, with three schoolboy observers, I visited a reed-bed in the south of England, and watched an adult male Marsh-Harrier (*Circus æ. aeruginosus*) carrying nesting material. We saw him three times in the course of the afternoon fly round with a reed and disappear into the same bed each time. The bird was seen again, behaving in the same way, in the same place eight days later by Mr. K. V. Elphinstone. Several visits were made to the same locality, between these two and subsequently, but the bird was not seen again, and at no time was a female observed. We have seen Marsh-Harriers here before, but not at this time of year or behaving in this way. W. MACNAE.

FEEDING OF FEMALE BLACK KITE BY MALE.

On February 10th, 1945, I was watching the Black Kites (*Milvus migrans ægyptius*) from the roof of a building in Cairo. There was a kite on a nest in a palm tree about forty yards away; owing to the leaves screening it I could not see precisely what it was doing, but think it was only building. Another kite carrying food arrived and alighted at the nest; I did not see what took place, but after a moment one of them (I think the original one) jumped on to a bough and tore up and ate the food. The other took wing and after circling around for some time flew down into a garden, and after much hesitation alighted on a table, removed a small piece of food from a dish with its bill and flew up to its mate, who at once took the morsel and swallowed it. The cock flew off, circled about for a few moments,

then perched on a balcony, shook his plumage, looked about and suddenly swooped down to alight on the hen's shoulders and coition took place, after which they stood preening a short while and then flew in pursuit of a kite that passed carrying food.

A second nest was clearly visible at only a foot or so above eye-level and with nothing to obstruct the view. On this nest a kite was sitting, almost certainly incubating eggs. After about half an hour its mate returned carrying what appeared to be some fowl or pigeon entrails ; it transferred the food to its bill and as it alighted the brooding bird rose, took, or rather snatched, the food and took wing, transferring the food to its feet as soon as it was clear of the nest, and flew off hotly pursued by several others that had witnessed the affair. The bird that had brought the food walked into the nest and commenced to incubate, continuing to do so for the half hour that I was able to continue watching.

Unfortunately both of these nests were destroyed, and although I frequently saw what appeared to be similar behaviour at other nests, owing to not having a clear view in such cases I was unable to be sure whether the birds actually changed over. DEREK GOODWIN.

[Schuster (*Beitr. Fortpfl.-biol. Vög.*, 1936, p. 69) in careful observations at two nests of *M. m. migrans* in Germany found that both sexes incubated and at any rate as a rule got their own food. Others have stated that the female alone incubates and is fed by the male, and probably the behaviour varies. Bernhardt (*Mitteilung. d. vereins sächs. Ornith.*, Bd. iv., p. 292), who is quoted by Schuster, but whose original paper we have not seen, definitely records feeding of the female by the male as of frequent occurrence, but according to Schuster it is not quite clear whether this refers to the actual incubation period or not.—EDS.]

SPOONBILL IN CO. GALWAY.

RECENTLY Mr. T. Scanlan, lightkeeper at Mutton Island, described to me a bird which he had been unable to identify. His description was diagnostic and left no doubt that the bird was a Spoonbill (*Platalea l. leucorodia*). Mr. Scanlan remarked that the bird was large, snowy-white, with long legs and neck similar to a "crane" (i.e. Heron). Most noticeable was the large, flat, "spade-like" bill which was used in a sweeping manner from side to side when the bird was feeding.

The occurrence took place about May 20th, 1943. The bird remained on the island for a few hours, departing with a change of tide. This constitutes the second recorded occurrence of the Spoonbill in Co. Galway. ROBERT F. RUTLEDGE.

FEEDING BEHAVIOUR OF NORTH ATLANTIC SHEARWATER.

On August 9th, 1941, near the Azores six or more North Atlantic Shearwaters (*Puffinus kuhlii*) were seen together, fluttering, hovering and dropping on to the surface of the sea and taking fish from the water. Many of the fish were jumping out of the water

and the birds were observed to take some of these while actually in the air. The latter fish were assumed to be Flying Fish as their actions appeared similar to the many which were constantly being observed in the neighbourhood, but the birds were too far away for this to be made out with certainty. Several birds were seen with a fish in the bill. The action of the Shearwaters thus occupied appeared very different from their usual swift gliding turning flight skimming the surfaces of the waves. There were a good many of these birds in this area, forty and sixteen being counted during an hour on August 8th and 9th respectively, and nineteen were once seen simultaneously, although not in a close flock. In view of these numbers it can be assumed that the birds belonged to the race *P. kuhlii borealis*.

G. BEVEN.

BLACK-NECKED GREBE BREEDING IN ANGUS.

IN June, 1945, Mr. George Waterston told us that he and Miss MacDougall had seen a pair of Black-necked Grebes (*Podiceps n. nigricollis*) on an Angus loch. We visited this loch on June 29th, 1945, and watched for about an hour, two small families of this grebe being fed by their parents. On two subsequent visits to the loch by other observers the young grebes were not seen and one can but hope that no disaster befell them. It seems probable that Black-necked Grebes have bred on this loch for some time, as Mr. C. G. Connell has kindly informed us that it was this loch where in 1935 he saw two pairs on June 14th. He wrote (*Scot. Nat.*, 1935, p. 147) "from their anxious behaviour opposite a large patch of sedge I think it can be assumed that they were nesting."

EVELYN V. BAXTER & LEONORA JEFFREY RINTOUL.

NOTES OF TURTLE-DOVE.

I OBSERVE that the note of the Turtle-Dove (*Streptopelia t. turtur*), described as like smacking the tongue is attributed by Mr. J. Walpole-Bond, quoted in *The Handbook* (Vol. iv, p. 142), to the male only. I can state that this note is uttered by both sexes when angry, not only when chasing interlopers from the nesting area, but also as the bird attempts to chivvy away other doves, or tame pigeons, that crowd too near it when feeding ; it is also uttered by the cock (probably with a difference in tone not noticed by human ears) as he alights during or after the display flight. It seems functionally parallel with the laughing cry of the Domestic Collared Dove (*Streptopelia risoria*). The Turtle-Dove also has a gasping alarm note, similar to that of the Palm-Dove, which is intensified to a piteous moaning cry, almost a scream, when in extreme terror. I have heard this last note only on Malta when handling newly caught, and usually injured, wild birds which are on sale everywhere there in May. My captive birds that I had prior to the war never uttered this cry when handled. Even one rather timid bird never did so ; hence I imagine it is only uttered in acute terror.

DEREK GOODWIN.

NOTE OF WOODCOCK.

In *The Handbook of British Birds*, Vol. iv, pp. 186-7, the various notes of the Woodcock are recorded, but there appears to be no mention of the characteristic note uttered when the bird is disturbed. I have lately heard this note again in Brittany, on November 13th, 1945. In the style of *The Handbook*, I should say "....when disturbed by man or dog, utters a sound like 'cout-cout-cout' or 'couk-couk-couk,' audible for some distance, in an angry-sounding manner".

This note is quite different from the "slight sound like 'nk, uk, uk,'" mentioned on the authority of R. J. Ussher, and for this reason I venture to call attention to it. GEORGES OLIVIER.

RUFFS IN CO. KILDARE.

BETWEEN September 25th and October 3rd, 1945, a small party of immature Ruffs and Reeves (*Philomachus pugnax*) was present on the Curragh Camp sewage farm in Co. Kildare. On September 25th one Ruff and two Reeves were present, on September 26th two Reeves and on October 3rd two Ruffs and three Reeves. On one occasion, when I approached too closely and they flew off, one of them uttered a call which I noted at the time as a low "kut-kut."

Humphreys (*List of Irish Birds*) describes the Ruff as "rare and irregular" in Ireland. A. G. MASON.

UNUSUAL BEHAVIOUR OF GREEN SANDPIPER.

ON October 11th, 1945, when out duck shooting in the evening, I put up a Green Sandpiper (*Tringa ochropus*), by the edge of a large pool, on a coastal marsh near Portsmouth, Hants.

This bird, after circling a few times at no great height, flew straight towards me at about five feet from the ground and finally passed within two feet, allowing me to touch and almost catch it. Directly after this incident, it circled up, gained height, and flew off without making any call. The light was just beginning to fade, but it was still quite bright enough for the bird to see me, as I was standing up in the open without any cover. The time was about 5.45 p.m. (G.M.T.). BERNARD JEANS.

CHIPPING-PERIOD OF LAPWING'S EGGS.

A nest of four eggs of the Lapwing (*Vanellus vanellus*) on plough had one egg beginning to chip at 8 a.m. on May 1st, 1929. At 12 noon on May 2nd, one nestling was hatched and the other three eggs were beginning to chip. At 6 a.m. on May 3rd, these three nestlings were hatched.

A nest of three eggs in a seeds hayfield were all beginning to chip at 10 a.m. on April 23rd, 1941. A cold N.E. wind blew all day, with sun shining : hen off the eggs for the greater part of two hours in the afternoon. At 6 p.m. on April 24th, the three eggs were well chipped, the young calling inside in answer to the adult, the tips of their mandibles visible in the small holes at the larger ends of the eggs. At 6 p.m. on April 25th the three nestlings were hatched, down dry, and both adults were flying around and calling.

At 12 noon on April 28th, 1945, two out of a clutch of three eggs began to chip : nest on plough. Day very cold with showers of sleet and hail ; also lightning. At 12 noon on April 30th, these two eggs were well chipped, young calling inside in answer to adult, and the tips of their mandibles visible through the holes in the eggs. The third egg was beginning to chip. Cold N.E. wind blew all day, ice $\frac{3}{4}$ -inch thick on water-trough early morning. At 11 a.m. on May 1st, three nestlings were hatched, down dry and adult brooding them.

R. H. BROWN.

BREEDING OF BLACK-WINGED STILTS IN THE NETHERLANDS IN 1944 AND 1945.

[The fact that Black-winged Stilts bred in Holland in 1944 and 1945 is of special interest to British ornithologists as showing that the 1945 'invasion' in this country was not a completely isolated phenomenon. We therefore asked Prof. van Oordt to be so kind as to supply us with particulars of the breeding of Stilts in Holland in the last two years and we are very pleased to publish his account.—EDS.]

THE first well established breeding of the Stilt (*Himantopus himantopus*) in Holland dates from 1931, when a pair hatched three young at Heel, near Roermond in the province of Limburg (cf. *Ardea*, Vol. xx, p. 150). In 1932 the Stilt possibly bred in the eastern part of Zeeuwsch Vlaanderen, near Hulst (cf. *Orgaan Club Nederl. Vogelkundigen*, Vol. v, p. 173) and in 1935 the Stilt was recorded as a breeding bird at at least ten places (at Texel, near the island of Wieringen, near Zaandam (prov. of N. Holland), near Workum (Friesland), Smilde (Drente), Gendringen (Gelderland), IJsselmonde (near Rotterdam), near Nederweert (Limburg) and in the eastern and western part of Zeeuwsch Vlaanderen (cf. Haverschmidt, *Faunistisch overzicht der Nederlandse broedvogels*, 1942). In 1939 a pair with young was seen near West-Schouwen (cf. *Ardea*, Vol. xxix, p. 202).

As far as I know breeding of this species was not observed in Holland in 1940-1943, but in 1944 when many polders were inundated by the Germans, several Stilts were seen in the end of July at the S.E. corner of the "Beemster," a large polder near Purmerend, about 10 miles N. of Amsterdam. Here Messrs. Strijbos and Niesen observed at least two pairs, which, as appeared from their behaviour, must have had young in the inundated meadows, as the birds showed intense and persistent alarm. In addition, two Stilts were seen in 1944 at the Mokkebank, a breeding colony of terns, etc., at the S.W. corner of Friesland, but in this case proof of breeding is lacking. In the summer of 1945 Stilts were seen at many localities, especially in inundated polders, but I know only of two instances in which breeding was proved. On August 13th, Dr. Wilmink observed near Rapenburg, south of Boschapelle (in the eastern part of Zeeuwsch Vlaanderen, the area situated between the Belgian frontier and the river Scheldt) a pair of Stilts with two almost

full-grown young, which were already able to fly and were certainly hatched here or in the immediate neighbourhood. The parents behaved very "nervously," uttering their alarm note constantly. On August 23rd, 1945, Dr. Wilmink was so fortunate as to see another pair of Stilts, accompanying three full-grown young in the Goessche polder, near Goes (Isle of Zuid Beveland), his residence, where the birds had already been observed on August 16th by Dr. Mulder, one of Dr. Wilmink's acquaintances. These young were, like those seen by Dr. Wilmink on the other side of the Scheldt, able to fly, but they behaved and called like true young birds, while the parents were in a state of constant agitation.

From these observations it follows that in 1945 the Stilt bred in at least two localities, both in the province of Zealand. It is very possible that in the inundated polders Stilts have also bred, but it was not easy in 1944 and 1945 to make excursions in Holland and moreover it was forbidden by our "protectors" to enter these inundated areas.

G. J. VAN OORDT.

LITTLE GULLS IN ABERDEENSHIRE.

ON May 13th, 1945, I saw an adult Little Gull (*Larus minutus*) along with two Common Gulls (*Larus c. canus*) at the mouth of a streamlet on the Deveron below Turriff. The bird was very tame, and, before the Common Gulls had flown off, I noticed that it was much smaller than these. The Little Gull swam about uneasily for a time, during which I made the following notes:—distinct black head, with black all over the throat and nape, reddish-brown beak and red legs. When the bird flew off, the first points to be noticed were its airy, tern-like flight and, compared with the Black-headed Gull (*Larus r. ridibundus*), its blunter and comparatively shorter, wider wings. It dipped once or twice to the surface of the water, and, on these occasions, I saw the dark colour right along the underside of the wing.

A day or two later, on May 16th, I got some clear, close-up views of two other Little Gulls, several hundred yards above the place where the first bird was seen. This time, there was an immature bird and an adult changing into summer plumage. It seems unnecessary to repeat details, but I must say that the second adult was identical with the first, except that it had some white near the beak and not so much dark colouring under the wing. The immature bird had a black beak, brownish legs, a wide dark-brown band at the end of the tail, primaries black with white "mirrors" and a black crown merging into white near the beak.

No more Little Gulls were seen after that date, and they were probably halting for a while on migration.

ADAM WATSON.

COMMON GULL IN SECOND YEAR HOLDING TERRITORY.

ON May 20th, 1945, I discovered a Common Gull (*Larus c. canus*) which had taken up a "stand" and territory on the outskirts of the colony at Cloonee Island, Lough Carra, and which bore a ring with which I had marked it as a juvenile at this colony on June 9th,

1943. By using a hide and binoculars I was able to ascertain the number on the British Museum ring, thus proving the age of the bird.

The bird used a large rock as a "stand" in the manner of nesting birds of this species. Also, like nesting birds, it had a limited territory and drove off intruders, allowing only one other bird to use the "stand" and two adjacent rocks.

This second bird from its size was obviously a female, and as she showed no mirrors on her wings I took her to be a second year bird also, though in the field there was no further evidence of second year plumage. The marked bird was obviously a male.

At the base of the large rock used as the "stand" and where another rock was contiguous I found a fairly well formed nest. The marked bird was daily and constantly on the "stand" until June 10th, on which date floods swamped the nest. It is perhaps significant that on June 13th I found the marked bird absent and did not again observe it.

While proof of actual nesting is lacking, there seems no doubt that this bird in its second year had taken up a territory. Possibly it had a mate and possibly they had attempted to make a nest. No display, no attempt at coition, nor carrying of nesting material was witnessed, though my watches were unfortunately not prolonged.

The plumage of the marked bird seen close and through binoculars showed four or five dark spots at the bend of the left wing, but none showed on the right. Just below the scapulars there was a very light brownish tinge. Even without binoculars the tail in flight showed slight traces of the subterminal band. Most noticeable was the entire lack of white tips to the primaries. Only through binoculars could a hair-breadth line of white be seen on the inner edge near the tips.

ROBERT F. RUTTLEDGE.

WINTERING LESSER BLACK-BACKED GULLS IN SOLWAY FIRTH AREA.

MR. J. A. G. Barnes, in his paper on "The Status of the Lesser Black-backed Gull in N.W. England and N. Wales" (*antea*, Vol. xxxviii, pp. 342-346) quotes a few records for the Solway Firth area as communicated by Mr. E. Blezard. The following additional records of wintering Lesser Black-backed Gulls (*Larus fuscus grælsii*) may be of interest.

One on Burgh Marsh, February 20th, 1928; one at Allonby, February 10th, 1929; one at Allonby, November 13th, 1932; one on Rockcliffe Marsh, December 23rd, 1933; one on Newton Arlosh Marsh, November 4th, 1934; four on Rockcliffe Marsh, December 24th, 1934; and six feeding off a dead salmon in Eden at Carlisle on November 19th, 1943; five on Ulleswater on November 5th, 1945.

R. H. BROWN.

GOLDEN ORIOLE IN YORKSHIRE, HAMPSHIRE AND DORSET.—Mr. W. S. Medlicott informs us that a Golden Oriole (*Oriolus o. oriolus*) sang for some minutes in some thick birches adjoining his garden at Partridge Hill, Goathland, on May 30th, 1945. He was unable

to get a view of the bird, but is very familiar with the song and is quite certain of the bird's identity. Mr. J. B. Watson also heard one in full song on May 10th, 1945, in an oak copse near Pennington, Hants, in which county, however, the species is of considerably more frequent occurrence than in Yorkshire. Another record for the south coast has been sent us by Mr. P. J. Conder, who heard one sing three times from a hazel hedge on the sea front at Swanage, Dorset, at 7.25 a.m. on May 7th, 1945. About two minutes later it flew due east out to sea into the mist.

LATE SWIFT IN YORKSHIRE.—Mr. Arnold B. Walker informs us that he had a good view of a Swift (*Apus a. apus*) at Whitley West Cliff on October 24th, 1945.

INCREASE OF BUZZARDS IN SUTHERLAND.—Dr. Donald Emslie-Smith informs us that on visiting the district of Assynt, Sutherland, in September, 1945, he was much struck by the very marked increase of Buzzards (*Buteo b. buteo*) since 1939, when the species was by no means common in that area. In 1945 he rarely failed to see two or sometimes three daily in quite separate localities. The birds were generally in pairs, but occasionally solitary and once three together. His previous observations were made in August of the five years immediately preceding the war.

BILL-COLOUR OF HERON IN BREEDING-SEASON.—In Vol. xxxviii, pp. 149-150, we published some observations by Mrs. Kathleen Gough on a Heron (*Ardea c. cinerea*) at a herony in Co. Galway which had a bright red bill and legs. Observations subsequently to hand (*id.*, p. 280, and *cf. Irish Naturalists' Journ.*, Vol. viii, p. 347) appear to indicate that some individuals may regularly assume during a part of the breeding-season a more or less transitory pink colour of bill and legs, of which the above condition may be regarded as an exaggeration. It would seem remarkable that a change of this sort, even in a small proportion of birds, should have escaped attention up to date, but it would be in line with transitory but striking changes in bill and leg colour in certain related species, such as the Night-Heron (*Nycticorax nycticorax*) and Buff-backed Heron (*Ardeola ibis*), which were also overlooked until recent years. The subject urgently needs further study and we should be very glad if any observers with access to heronies in low trees or otherwise suitable for observation of the birds at close range would keep a close look-out for any birds with a tendency to pink or red colouring of bill or legs and send exact observations on any such birds to the Editor.

AVOCETS IN HAMPSHIRE.—Mr. J. B. Watson informs us that on May 9th, 1945, he saw two Avocets (*Recurvirostra avosetta*) on the Keyhaven Marsh, Hampshire.

QUAIL BREEDING IN WILTSHIRE.—Miss Susan Taylor informs us that on July 2nd, 1945, she found the broken egg-shell of a Quail (*Coturnix c. coturnix*) on the chalk downs near Calne, Wilts. It was near a large cornfield and it seems probable it had been carried from there.

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BRITISH BIRDS

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EDITED BY

BERNARD W. TUCKER, M.A., F.Z.S., M.B.O.U.

ASSISTED BY

NORMAN F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

AND A. W. BOYD, M.C., M.A., F.Z.S., M.B.O.U.

CONTENTS OF NUMBER 5, VOL. XXXIX, MAY 1, 1946.

PAGE

Clutch and Brood Size in the Robin. By David Lack (concluded)	130
All the year Breeding of the Rock-Dove. By the Rev. John Lees	136
Notes on the Breeding Biology of the Crested Lark. By Major P. H. T. Hartley	142
Studies of some species rarely photographed. IV. The Marsh- Warbler. Photographed by George Yeates	145
Some Remarks on Sex Behaviour of Doves. By Derek Goodwin.	146

Notes :—

Rare migrants in the Trent Valley, Nottinghamshire, 1945 (R. J. Raines)	148
Jackdaw carrying young thrush in claw (T. S. Williams) ...	149
Siskins in Westmorland in summer (M. G. Robinson) ...	150
Arctic Redpolls in Northumberland and Norfolk (George W. Temperley, Cmdr. C. E. Hamond)	150
Young birds returning to nest (Lt.-Col. B. H. Ryves) ...	152
Sun-bathing habit of juvenile Great Tits (T. S. Williams) ...	152
Continental Great Tit in Kent (Dr. James M. Harrison) ...	153
Greenish Warbler in Shetland (Samuel Bruce)	153
Display of Bee-eater (Major P. H. T. Hartley)	154
The Great Spotted Woodpecker in North-east Scotland (George Waterston and Adam Watson, Junr.)	155
Tawny Owl nesting in factory wall (John Cassidy)	155
Goshawks in Nottinghamshire (R. J. Raines)	155
Display flight of Cormorant (Major P. H. T. Hartley) ...	157
Turnstones using elevated perches (D. D. Harber)	157
Greenshank "up-ending" (H. Money-Coutts)	158
Lapwing's clutch of six eggs (Sidney Cockcroft, George Edwards, Eric Hosking and Edward Watson)	158

Short Note :—

Probable Lesser Kestrel in Sussex	158
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Letters :—

Parent birds probing amongst brood in nest (Lt.-Col. B. H. Ryves, Stanton Whitaker)	159
Delayed hatching of eggs (Sir Philip Manson-Bahr) ...	160

CLUTCH AND BROOD SIZE IN THE ROBIN

BY

DAVID LACK

(Edward Grey Institute of Field Ornithology, Oxford).

(Concluded from page 109).

BROOD SIZE.

The size of Robin broods was assessed from the data submitted on nesting success, and refers to young fledged and not to young hatched. In addition, various bird-ringers submitted data on numbers ringed per brood, but, as they point out, one or more members of a brood may sometimes escape ringing, in which case it would not be recorded. The figures in Table X show that the number of young per brood ringed was a little smaller than the number of young per brood raised, hence the ringing data were discarded.

The number of young fledged from a Robin's nest is on the average 0.76 smaller than the average clutch-size. As might be expected, there are seasonal variations in brood size, which correspond with the seasonal variations in clutch-size.

TABLE X. Brood Size.

Young hatched in	No. found	Size of Brood.							Average Size
		1	2	3	4	5	6	7	
April ...	... 71	1%	6%	15%	23%	44%	10%	—	4.3
May ...	... 130	2%	8%	12%	25%	39%	12%	2%	4.3
June ...	... 45	2%	2%	13%	27%	38%	18%	—	4.5
July ...	... 16	6%	6%	6%	37%	31%	13%	—	4.2
TOTAL	... 262	2%	7%	13%	26%	39%	13%	1%	4.34
Broods ringed	297	4%	7%	17%	21%	41%	10%	1%	4.18

NESTING SUCCESS.

Nesting success can be estimated either per nest or per egg, and as there are advantages in both methods, both are given in Tables XI-XV. The figures show that 73 per cent. of the eggs in completed clutches hatch out, and that of the hatched young 78 per cent. leave the nest successfully, meaning that 57 per cent. of the eggs in completed clutches produce fledglings. (Nests deserted or destroyed during laying have been ignored in this analysis as not all helpers observed the laying period). Nice (1937) showed that passerine species building open nests have an average egg-fledgling success of about 43 per cent., while for hole-nesting species the corresponding figure varies between about 55 per cent. and 76 per cent. The Robin, with a figure of 57 per cent., is intermediate between a typical open-nesting and a typical hole-nesting species, as might be expected since it nests in a covered niche.

As shown in Tables XIII-XV, there are marked local variations in nesting success. Hatching success varied from under 40 per

cent. in suburban Surrey to over 80 per cent. in country districts in South Devon and Inverness-shire. Fledging success varied from under 60 per cent. in a Montgomeryshire district to 95 per cent. in part of South Devon (higher estimates are based on too small samples to be significant). Nesting success from egg to fledgling varied from about 30 per cent. in suburban Surrey and part of Montgomeryshire to over 70 per cent. in districts in Devon and Derbyshire. Hence it seems that in some districts the number of Robins leaving the nest is about double what it is in others. These variations are probably very local, depending on the density of cats and egg-collecting boys near towns and villages, and on the density of Magpies, Jays, Squirrels, etc., and hence on the intensity of game-preservation, in woodland areas. The most favourable habitats are likely to be, first, private gardens and secondly woods remote from houses where nest predators are destroyed by gamekeepers. As nesting success is probably influenced by habitat, observers are asked to add this information in future records.

TABLE XI. Summary of Hatching Success.

No. of nests with completed clutches.	Failed.	Eggs hatched except for :				All hatched.	or all except one egg hatched.	% in which all eggs hatched.
		5	4	3	2			
379	70	3	1	10	19	75	201	73%

In addition, 35 nests were lost during laying, out of at least 167 found before laying was completed.

TABLE XII. Summary of Fledging Success.

No. of nests found.	Failed.	Some but not all young raised.	All young raised.	% in which all young raised.
268	53	18	197	74%

TABLE XIII. Local Variations in Hatching Success.

District (as in Table XV).	No. of nests found*	Eggs hatched except for :				% in which all eggs hatched.		
		5	3	2	1			
1. Totnes 21 3 - - - 4 14 86%								
2. Tiverton & Paignton 34 6 - 1 - 7 20 79%								
3. Llanymynech ... 23 9 - - 1 6 7 30%								
4. Cardiff 14 5 - - 1 4 4 57%								
5. Englefield Green ... 10 5 - - - 3 2 50%								
6. London 15 7 1 1 - - 6 40%								
7. Great Missenden ... 12 2 - - - - 10 83%								
8. Oxford 15 3 - 1 1 3 7 67%								
9. Derby-Yorks. 31 5 - - 2 4 20 77%								
10. S. Yorks. 11 3 - - 1 2 5 64%								
11. W. Yorks. 15 2 - - 1 2 10 80%								
12. Rothiemurchus ... 17 1 1 - 1 3 11 82%								

*Omitting those deserted or destroyed during building or laying, as not all observers found their nests before incubation started.

TABLE XIV. Local Variations in Fledging Success.

District (as in Table XV).	No. of nests found.	No. young raised.	Some but not all young raised.	All young raised.	% in which all young raised.
1. Totnes	...	23	5	1	17
2. Tiverton & Paignton	28	2	—	26	93%
3. Llanymynech	14	5	1	8	57%
4. Cardiff	...	5	1	4	—
5. Englefield Green	...	8	1	6	75%
6. London	...	8	—	8	100%
7. Great Missenden	...	10	1	2	70%
8. Oxford	...	9	3	6	67%
9. Derby-Yorks.	...	8	—	1	88%
10. S. Yorks.	...	4	—	4	—
11. W. Yorks.	...	15	3	12	80%
12. Rothiemurchus	...	4	2	2	—

TABLE XV. Local Variations in Hatching and Fledging Success.

District.	Observer	Period.	No. eggs found*	No. young found†	% eggs hatched	% young fledged	% eggs fledged
1. Totnes, S. Devon.	D. Lack & Dartington Hall Bird- watching group.	{ 1935-37 } 1945	106	102	82%	77%	63%
2. Tiverton and Paignton, S. Devon.	R. A. W. Reynolds.	1939-43	154	116	75%	95%	71%
3. Llanymynech, Montgomery- shire.	J. H. Owen.	1945	113	69	57%	58%	33%
4. Cardiff, S. Wales.	G. C. S. Ingram.	1909-27	67	20	54%	70%	37%
5. Englefield Green, Surrey.	D. J. May.	1942-45	49	30	37%	80%	30%
6. London dis- trict, Surrey- Middlesex.	J. E. Roberts.	1928-42	84	38	45%	100%	45%
7. Great Missen- den, Bucks.	T. W. Arnold.	1945	60	50	83%	80%	66%
8. Oxford.	R. Parkhurst D. Lack	{ 1941-45 } 1945	80	44	71%	75%	53%
9. Derby-Yorks. border.	A. R. Whitaker.	1903-45	153	35	79%	94%	74%
10. South Yorks.	G. R. Edwards.	1925-44	52	18	67% [100%]	67%	—
11. West. Yorks.	J. R. Wheater.	1935-45	82	74	79%	77%	61%
12. Rothie- murchus, Inverness-shire.	W. M. Ross.	1933-45	91	—	84%	—	—
Total, including all others.			1,936	1,216	73%	78%	57%

*Omitting nests deserted or destroyed during laying, as many observers did not commence watching until laying was completed, while some desertions were perhaps due to the observer.

†The total of young found includes some not represented in the total of eggs found, and omits some represented in the latter. This is because some nests were found only as the young were hatching, while in some cases an observer who watched a nest from eggs to hatching could not follow it further.

The analysis of nesting success according to season of year, and according to number of eggs or young, is postponed until the 1946 data are available, as the figures are as yet too few.

The potential rate of increase of the Robin cannot, of course, be estimated from the nesting success, because the important figure is not the number of young raised per nest, but the number of young raised per pair. If a nest is destroyed, the birds quickly lay again, hence a nest destroyed in the early stages has a less serious effect on the population than one destroyed just before the young fledge. Further, if the first brood is successful, some, but perhaps not all, pairs raise a second brood. Indeed, in 1945, a Cheshire pair raised three successful broods, followed by a fourth in which the young were destroyed (A. W. English). Osmaston (1934) recorded a case in which four successive broods of young were hatched, but the first and fourth broods were destroyed by a cat before they left the nest. A Devon pair raised three broods in 1945 (M. Brooks-King), and a Renfrew pair did the same in 1943 (E. J. Ramsay), while a few other records were received of three attempts during a season, though no others in which more than two attempts succeeded.

Of nineteen Robin pairs watched in South Devon between 1935 and 1937, two pairs failed to raise any young in a season, three pairs each raised two broods, and fourteen pairs raised at least one brood each in a season. Probably the number of pairs raising two broods was higher than stated, as I was too busy to search intensively for late nests. In not all cases was the number of young recorded, but assuming that the average brood-size was the same as for England as a whole, this means that nineteen pairs raised at least 87 fledglings, an average of at least 4.6 per pair. As already mentioned, the true figure was probably higher than this.

SUMMARY.

1. The easiest way to find a Robin's nest is to see or hear the cock feed the hen and then to watch the latter back to her eggs.
2. The average clutch is higher in egg-cabinets than in nature.
3. The breeding-season is earlier in the south than the north of Europe, and earlier in the west than the centre of Europe at the same latitude. The British Robin rarely breeds in winter.
4. The average clutch increases from early spring until June, after which it declines. The decline occurs slightly later in Germany than England, and distinctly later in Scandinavia.
5. The average clutch seemed higher than usual in March and April, 1945 in England and Wales, associated with unusually fine and warm weather, and unusually low in Inverness-shire in May, 1945, associated with unusually cold weather. This correlation needs checking.
6. Average clutch-size increases from south to north in Europe and also from west to east.

7. The ultimate factor affecting the survival value of clutch-size is considered to be the amount of food which the parents can collect per day for the brood; hence daylength is important, though not the sole factor. The proximate factors affecting the physiology of clutch-limitation are not known. Temperature is perhaps important.

8. In completed clutches, about 57 per cent. of the eggs laid produce fledged young, but there are marked local variations in hatching and fledging success.

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APPENDIX.

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ALL THE YEAR BREEDING OF THE ROCK-DOVE

BY

JOHN LEES.

INTRODUCTION.

Following my finding of Rock-Doves (*Columba l. livia*) in full nesting activity in January, 1944, at Eathie Shore by Cromarty, (*antea*, Vol. xxxvii, p. 237) I decided that it would be worth while to keep a watch on the nesting places all the year round; for it was obvious enough that the normal nesting period April-September could not be entertained for this species.

The nesting caves are unfortunately very inaccessible, the only way to them being along a boulder-strewn shore, with no paths, and past places where the tide was liable to cut off the unwary wanderer. In the north of Scotland, one cannot count much on help, or secure corroborative evidence, of what goes on in bird life in such isolated areas.

I had the further difficulty that even when I reached the caves where the birds were present, the sites they occupied were deep fissures and holes, usually in the roofs of the caves; where it was out of the question to reach the birds by hand. Only some half-dozen nests along the whole area, could, after a great deal of planning and exertion, be so reached, and that after getting oneself covered with ordure of a very objectionable kind.

However, where, as usually, access was impossible, it was found that circumstantial evidence of the progress of eggs and young birds was easy to obtain, and I was able to check its accuracy in the few places where the nests could be actually handled.

CIRCUMSTANTIAL EVIDENCE USED.

1. In making the survey, the presence of eggs, or condition of young was, in the few cases possible, verified by hand. Thus it was established, that only breeding birds used the nesting holes; so that the presence of fresh droppings on the cave floor beneath the nesting places was sufficient evidence, even in the absence of the birds, to denote breeding activity. The progress of breeding in any colony was further denoted by the nature and extent of the droppings. A few fresh droppings over the stale remains of former activity meant that the birds were prospecting, or preparing to nest. Towards the end of a season of breeding in any one colony, the piles of excrement were large, mixed with feathers, and usually offensive.

2. The closeness of brooding was indicated by the behaviour of the birds. In approaching a nesting cave, one often finds that the occupants fly, long before one even gets near the cave mouth; this would imply that the birds were near either the beginning or the end of their nesting activities. If, on the other hand, the birds were reluctant to fly, or perhaps refused altogether, one would conclude

that close brooding was taking place, and that the time was within 10 days before or after the hatching of the eggs.

3. Recent hatchings were indicated by the presence of fresh egg-shells on the floor of the cave, beneath the nesting holes. The practice of the Rock-Doves is to cast the shells clear of the actual nesting place, but not outside the cave. Occasionally the two halves of the shell were folded within one another. This sign has to be used with caution, as it is possible for shells that look perfectly fresh and white to be blown into a corner of a cave, and lie there for months undisturbed. In the majority of cases, the shells were among the heaps of droppings, and their relation to these was obvious.

There are other indications, such as the condition of feathers, down, etc., dropped by the birds and the presence of stems or roots dropped by the birds while nest building, but these three were enough to give an accurate picture of the nest.

THE CAVES.

There are many caves, ledges, and holes used by the Rock-Doves in this region of coast, N.E. of Rosemarkie, and S. of Cromarty. I chose four caves from among the many for special observation. These had the advantage of accessibility, and of convenience for the observation of nests and breeding activities. The four were as varied as possible.

Cave A.—1.9 miles N.E. of Rosemarkie Church, a small cave with a maximum of six nests. Two of the nests were accessible (with difficulty) by hand.

Cave B.—2.4 miles N.E. of Rosemarkie Church. The cave was large, housing the greatest colony of Rock-Doves on this coast (about 30 nests) in the many fissures in its roof. Subsidiary caves though often occupied, were not included in the survey. No nests were accessible to the hand.

Cave C.—3.0 miles N.E. of Rosemarkie Church. This included two small caves with a multitude of narrow connecting passages some leading to the cliff outside. There was room here for 20 nests, some accessible by hand.

Cave D.—3.2 miles N.E. of Rosemarkie Church, a regular, rather deep, oven-shaped cave, containing at most 6 nests, some accessible.

TWO PREVIOUS OBSERVATIONS.

I had in my notes made prior to this survey, that the Rock-Doves were somewhat erratic in their nesting season. In August, 1941, on visiting the caves at Eathie, I had found some birds brooding eggs. These I assumed to be the usual late nesters that one finds among the *Columbidæ*. Interest was further aroused by the finding in April, 1942—I believe the date was the 18th—of a young Rock-Dove that had just been killed by a Sparrow-Hawk. The young bird was fully fledged, and well able to fly. The parents of this bird must have begun nesting at least as early as mid-February, probably earlier; and that, so far as my knowledge went then, was a remarkably early date.

OBSERVATIONS ON NESTS.

In the following series of notes, no attempt has been made to do any more than give a short indication of nesting progress in each cave. Exact details were usually out of the question. Even the number of nesting pairs could only be an approximation. A dash in the record (—) means that the cave was not visited on the date. Special details of interest are given in notes following the table.

NESTING OF ROCK-DOVES AT EATHIE SHORE, 1944-5.

Date.	Cave A	Cave B.	Cave C.	Cave D.
15.1.44	... A few fresh droppings but no eggs.	15 nests, some with eggs, some with young.	No activity	No activity
22.1.44	... 2 nests contained eggs.	About 12 nests had young birds, some having hatched since last week.	No activity	No activity
29.1.44	... Incubation proceeding.	All occupied nests had young birds.		
5.2.44	... One young bird by itself in one of nests.	—	—	—
17.3.44	... Young bird had flown, some activity in other nests.	3 birds sitting but no hatchings.	Many nests now occupied and several fresh hatchings.	No activity.
15.4.44	... Fresh eggs in two accessible nests.	About 20 nests in occupation. Various stages.	Many nests occupied, at various stages.	No activity.
23.4.44	... All nests deserted. (1)	As 15.4.44	As 15.4.44	No activity
6.5.44	... Two fresh eggs in one nest.	The 20 nests now all, I think, with young birds.	All occupied nests now with young birds.	No activity
10.5.44	... Nest again deserted.	—	—	—
10.6.44	... No activity	No activity	One nest only had a young bird ready to fly.	A few fresh droppings.
9.7.44	... No activity	No activity	No activity	A new nest had been built. (unoccupied).
17.7.44	... No activity	No activity	No activity	No activity
29.7.44	... No activity	Fresh droppings.	No activity	No activity

Date.	Cave A.	Cave B.	Cave C.	Cave D.
18.8.44	... No activity	6 nests with close brooding.	No activity	2 nests, one at least with eggs.
1.9.44	... No activity, though caves nearby were occupied	Young birds in all nests	Fresh occupation	—
18.11.44	... New occupation but no eggs.	8 nests occupied, 4 at least with young birds. One feral domestic breeding.	Sites well occupied. Hatching shells not recent, indicating advanced young.	No activity
25.11.44	... 3 nests, all with eggs.	F.D. killed by hawk and its nest deserted. (2)	—	—
16.12.44	... Young birds.	No activity in cave, but 6 young were flying by cliff outside.	Sites well occupied. Some close brooding and some young birds.	Fresh activity
7.2.45	... No activity though one cave nearby had young birds. (3)	—	—	—
10.2.45	... No activity	Some close brooding but no hatchings.	—	2 nests with close brooding birds.
24.3.45	... Two nests with eggs.	About 10 nests at various stages.	Several close brooders and one hatched egg.	Both nests had young.
28.4.45	... 2 nests with advanced young. 4 nests closely brooded.	About 25 nests at various stages.	Nests well occupied. Various stages.	One nest with small young bird otherwise inactive.
5.5.45	... One advanced young, others recently hatched.	15 nests occupied. All I believe, had young birds.	As 28.4.45	Inactive. No sign of fledgling.
19.5.45	... One new nest had a brooding bird.	12 nests with advanced young.	Nests all with young birds.	No activity
Visits were unavoidably interrupted until August.				
6.8.45	... Fully occupied and all with eggs.	Obvious start of a new activity.	Some 6 birds brooding eggs	2 birds with eggs.
26.8.45	... Young in all nests.	6 occupied nests. One newly hatched young.	One nest torn down and all others deserted. (4) (5)	3 young birds (2 nests)

NOTES.

(1) The reason for the desertion of the nests in this cave was a boy's "experiment." He interchanged an egg from a neighbouring Jackdaw's nest with one of the two in the Rock-Dove's, hoping, no doubt, to find the Rock-Doves fostering a young Jackdaw. The result was disastrous; not only did the doves desert their nest, but all others in the cave followed suit.

(2) The doves on this coast are not to any appreciable extent mixed with feral domestic stock. Occasionally an intruder does creep in. In this case, as in others I have noted, it was the domestic bird that fell a victim to the Sparrow-Hawk.

(3) A spell of severe weather here has to be recorded. Deep snow covered the ground almost continuously from January 1st to February 6th. The temperature on January 25th, was about 2° F. In spite of this, there were young birds in two of the caves not in this survey, on February 10th.

(4) This was another case where the spoliation of one nest led to desertion by the whole colony. Rock-Doves seem to be rather sensitive in this way. This nest had been torn down. In such a case, it is normally some time before the birds re-occupy the colony, unless the unhatched eggs are removed from the nests.

(5) At this date, the floor of the cave, as in others not in the survey, was strewn with wings of the Small Tortoiseshell Butterfly (*Aglaia urticæ*). In one cave there were (literally) hundreds of such wings, all nipped off close to the body. They were always mixed up with dove droppings. In one such cave, House-Martins (*Delichon u. urbica*) shared a site with the Rock-Doves, and I imagined for a moment that they might be responsible. But later I found the wings where there were no House-Martins. No other lepidopterine wings were found; and as it was only where the doves were incubating eggs, the conclusion seemed to be inevitable that the doves had eaten the butterflies.

DISCUSSION OF THE OBSERVATIONS.

1. Breeding activity goes on more or less all the year round. There is a marked maximum in April, coinciding with the general nesting season for resident birds. The minimum occurs in July—only few doves anywhere on the coast are found breeding then. This may be coincident with the moulting of the body feathers; but moulting certainly proceeds during the autumn months, when the caves are strewn with moulted feathers from nesting birds.

2. Nesting usually takes place simultaneously by small groups of pairs (2-10) occupying adjacent sites in one cave.

3. In each cave, there are alternate periods of nesting, and quiescence. The latter are usually quite short, and sometimes non-existent through the interlapping of active periods. Breaks of a month or two, however, may occur in summer, or after some disturbance of one of the nests.

4. The active periods fall into four groups. There is the main period of spring nesting, where hatching takes place about April. This is followed, after a break, by a summer activity, young birds appearing in August. After this come autumn and winter periods, with hatchings about November and January.

5. I have found the period of incubation to be 18 days, and the period between hatching and flight of young birds, 35-37 days. Assuming these, we may obtain approximate dates for the beginning and end of each period. These are given in the following table. In some cases these dates may be a few days on either side of the mark.

NESTING PERIODS.

Approximate dates of beginning of first incubation, and of last young birds leaving nest. The number of birds (pairs) occupying each cave is also given.

Period.	Cave A.	Cave B.	Cave C.	Cave D.
Winter 1943-4...	(2) 18.1.44 to 12.3.44	(15) 25.12.43 to 29.2.44	none	none
Spring 1944 ...	(1) 10.4.44 to ...	(20) 12.3.44 to 31.5.44	(16) 19.2.44 to 11.6.44	none
Summer 1944 ...	none	(6) 1.8.44 to 25.9.44	none	(2) 10.8.44 to 3.10.44
Autumn 1944 ...	none	(8) 18.10.44 to 12.12.44	(12) 10.10.44 to 4.12.44	none
Winter 1944-5	(3) 20.11.44 to 14.1.45	Merged into spring period	(12) 24.11.44 to 24.1.45?	Merged into spring period.
Spring 1945 ...	(6) 6.3.45 to 5.6.45 (perhaps 29.6.45)	(25) 28.1.45 to 28.5.45	(20) 25.2.45 to 28.5.45	(2) 25.1.45 to 25.5.45
Summer 1945 ...	(6) 13.7.45 to 5.9.45	(6) 6.8.45 to 28.9.45	(6) 29.7.45 to ...	(2) 26.7.45 to 17.9.45

IN CONCLUSION.

This all-the-year-round breeding is surely unique among British birds. It is doubtless an exaggeration to say that all Rock-Doves breed nearly the full round of the calendar, and have four families a year. It may be that a second party of birds uses the nests after the first has flown; yet, that one nest should be used by a cycle of different pairs, during the year, sounds somewhat unlikely. I am not in a position to discuss the biological implications of this almost continuous breeding activity; all I can do is to state the facts as I have found them on this isolated bit of coastline.

I have to express my thanks to my sons John and George for sharing with me the difficulties of these excursions, and for climbing undauntedly into those ill-smelling holes where the wild pigeons made their nests.

NOTES ON THE BREEDING BIOLOGY OF THE CRESTED LARK

BY

P. H. T. HARTLEY.

THE following observations on the breeding biology of the Asiatic race of the Crested Lark (*Galerida cristata magna*) were made near Gaza in southern Palestine in the months of May to July, 1944. Crested Larks were common residents on the dry, rolling downlands which lie inside the coastal dunes. Most of this ground is sheep walk, with some patches of barley and small vineyards and gardens.

Sexual Display.—The sexual displays seen were neither elaborate nor varied. A single incident will serve to illustrate them. "May 31st, 1944. 13.30 hours. A Crested Lark, X, stood in front of another, Y, and facing away from it. X was singing and stood very upright, head held high with crest erect and the closed tail cocked up at an angle of 45°; Y crouched a little; X ran in a half-circle and Y crouched still lower with tail depressed; X stood upright above Y, and I expected to see a mounting—but Y ran forward. Several times X ran with very upright carriage towards Y, but Y always scuttled away a little."

In Iraq a very similar carriage was seen when one lark was attacking another. "May 20th, 1943. 16.50 hours. A Crested Lark, in menacing another, ran at it sideways, head up with crest vertical and the tail raised, but not fanned, above the back."

Nests, Eggs and Incubation.—Nests were placed under low earth banks, beneath clumps of thistles or in thick grass. Of four nests which were not sheltered all round, one opened west, one W.N.W. and two N.W. The nests were simple and roughly built cups of grass, with no trace of the doming observed by Clancy in southern Italy (*antea*, Vol. xxxviii, p. 134).

One egg was laid each day, always before 7.30 hours. Four clutches of 4 were seen, two of 5 and one of 6. Incubation began on the day of the laying of the last egg and appeared to be the duty of the hen alone. At one nest on May 20th (the fourth day of incubation), the lark sat for thirteen minutes from 14.01 hours and was then frightened off by some Arab camel-men. She returned after twelve minutes, but sat for only five: after an absence of another nine minutes she returned and sat for seventeen minutes from 14.40 hours. Then she was away for nine minutes, returning to sit again at 15.06 hours. In seventy-three minutes of observation the eggs were covered for only thirty-five; the shade temperature was 26°C. During the third absence of the hen, a bird believed to be a cock came to the nest and stood over the eggs, but did not settle down to incubate.

At the same nest on May 27th (the eleventh day of incubation), the hen sat for thirteen minutes from 13.13 hours and then left for ten and a half minutes. She sat for ten and a half minutes and was then away for seventeen. At 14.04 hours she returned and sat

until 14.45 hours : during this session the first egg of the clutch was hatched. In ninety-five minutes of observation the eggs were covered for sixty-four and a half.

The egg-shells are eaten by the hen as soon as the chick has emerged or carried away and dropped within a foot or two of the nest. An egg which was found cracked in the nest on the tenth day of incubation had vanished by next morning, but in another nest an addled egg was left behind when the young fledged.

Although incubation does not begin until the clutch has been completed, hatching at the three nests where it was observed was spread out over two days. In a nest in which the clutch was completed on May 17th, one chick hatched at 14.25 hours on the 27th, but at 8.30 hours on the 28th one egg (from which a chick had emerged before next morning) was still unhatched. The incubation-period at this nest was eleven and twelve days. At a second nest one chick was hatched and dry at 18.20 hours on June 22nd, and the fourth was just clear of the shell at 11.45 hours on the 23rd. The incubation-period was at least eleven and twelve days. At a third nest one chick was hatched and dry at 11.30 hours on May 29th, and the last chick to come forth had just broken open the egg-shell at 11.45 hours on the 30th.

Care of the Young.—Both parents feed the young in the nest. The small grasshoppers which swarm on the coarse herbage make up the bulk of the diet. In Table I are shown the details of observations at a nest in which five young had hatched on May 27th-28th.

TABLE I.

Date.	Hour.	Temp. °C.	Days old.	Feeds.	Number of removals of faeces.	Notes.
3rd June	13.30- 15.30	28	7-8	11	8	A young bird defaecated once on the edge of the nest in the absence of the parents.
4th ,,	8.45- 10.15	28	8-9	15	6	On one occasion no feed was given when faeces were removed.
5th ,,	14.20- 15.00	27	9-10	7	Not re- corded	The chicks were advancing up to 6 inches from the nest to meet their parents.

Usually only one chick was fed at each visit. In 33 feeds recorded, one bird was fed on 30 occasions, two on 2 occasions and two or three once. Faeces may be swallowed (3 instances) or carried away (10 instances). In one case the first pellet passed by the chick was swallowed and the second carried away.

At three nests the fledglings were ten and eleven, eight and nine, and nine and ten days old when they left their nurseries. There was no evidence that the nests were visited again.

"*Injury-Feigning.*"—Crested Larks driven from their eggs or young will sometimes make an "injury-feigning" display. "June 19th, 1944. 11.40 hours. The lark, when flushed from her eggs (which were three days from hatching), made a blundering, smashing display of feigned injury through the long grasses near the nest." "June 4th, 1944. 8.45 hours. While I was installing M. in the hide (over a nest in which the young were eight and nine days old), one of the parents grovelled about, calling, a few yards away. I walked towards it and it went grovelling along the ground before me, head low, tail depressed and back feathers humped. It flew across a narrow erosion gully, fluttered through the tall bents, plumped down and went scuffling before me for at least 50 yards with its wings widely open, apparently crippled, but moving swiftly. The resemblance to the struggles of an injured bird was remarkable. After thus 'luring' me, the lark curved away to one side and stood to watch me walk on."

Summary of Breeding Results.—

Number of eggs seen	...	36	
" "	" hatched	...	18—50%.
Number of young fledged	...	18—100%	of hatchings.
Fate of eggs which failed to hatch :—			
Addled	...	...	1
Broken in nest	...	...	2 /
Deserted	...	...	3 (after one of the clutch had disappeared and a second been broken in the nest).
Ploughed in	...	...	4 (one clutch).
Laid out of nests	...	2	
Unknown	...	...	6 (a clutch of 5 vanished after some days of incubation).

Acknowledgements.—It is a pleasure to record my gratitude to Capt. C. J. Worley, R.A., for much help in work on Crested Larks. I am also grateful to Major J. R. P. Montgomery, M.C., The Oxford and Bucks Light Infantry, and to Subaltern Hoare, A.T.S., who made observations for me.



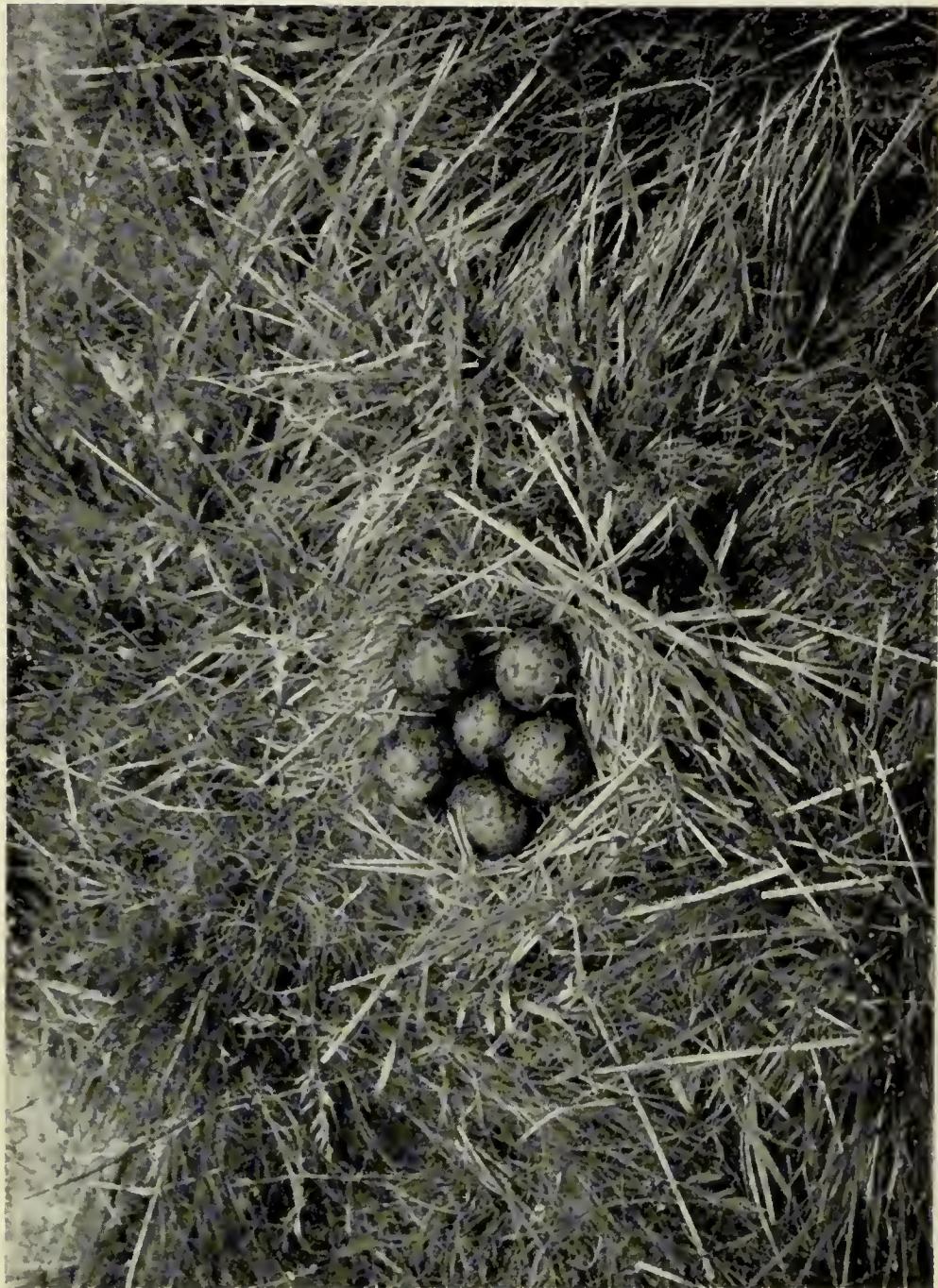
MARSH-WARBLER (*Acrocephalus palustris*) AT NEST: Somerset.
(Photographed by George Yeates).



MARSH-WARBLER (*Acrocephalus palustris*) AT NEST: Somerset.
(Photographed by George Yeates).



MARSH-WARBLER (*Acrocephalus palustris*) AT NEST : Somerset.
(Photographed by George Yeates).



NEST OF LAPWING WITH SIX EGGS.
(Photographed by Eric Hosking.)

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

IV. THE MARSH-WARBLER.

Photographed by GEORGE YEATES.

(Plates 17-19).

THE scarce and local Marsh-Warbler (*Acrocephalus palustris*) is only known to breed regularly in Worcestershire, Gloucestershire, Somerset, Dorset, Sussex and Kent. In some other counties, such as Oxfordshire, it appears to do so with fair regularity but in a notably erratic manner, single pairs or little colonies of two or three pairs nesting for one or more seasons in a given locality and then often deserting it for no apparent reason, the species at the same time perhaps appearing in some new site or sites not previously occupied.

Mr. Yeates's photographs were taken at two nests in the osier-beds of the Somerset levels, one of the strongholds of the species. They show well the coarser materials and less neat and compact construction of the nest as compared with that of the closely related Reed-Warbler (*Acrocephalus s. scirpaceus*). They also illustrate the tendency of the supporting stems to pass not so much through the solid structure of the nest as outside it, with the materials more or less looped out to embrace them, especially at the rim of the nest, where they form the so-called "basket-handles."

The tilting of the nest in Plate 19 is purely due to its insecure anchorage and not to any manipulation or disturbance by the photographer.

The Marsh-Warbler is famous for its strikingly beautiful and vivacious song and its extraordinary mimetic powers, but for which it would no doubt be even more often overlooked or confused with the Reed-Warbler than in fact it is. The song, is indeed, the best distinction from the Reed-Warbler, which the Marsh-Warbler closely resembles, though the upper-parts are of a colder, more olivaceous brown, without the rufous tint of the commoner species, and the under-parts, especially the throat, usually appear whiter. Since Reed-Warbblers may frequent osier-beds, which are the favourite haunts of the present species, there is an overlap between the habitats of the two, but the Marsh-Warbler is in fact less restricted in its haunts, frequenting in addition, to quote *The Handbook*, "lowland copses or bushy places with vigorous undergrowth, alluvial or waste ground with meadow-sweet, willow-herb, nettles and (or) other tall plants, orchards, corn-, rye-, bean- and other cultivated fields, and thick hedgerows on or adjacent to such ground," sometimes on quite dry ground, though commonly near water.

B.W.T.

SOME REMARKS ON SEX BEHAVIOUR OF DOVES
BY
DEREK GOODWIN.

The Handbook of British Birds (Vol. v, p. 280) states on the authority of O. and M. Heinroth that the male Rock-Dove (*Columba livia*) feeds the female before coition. I think one may safely assume that the pairing ceremonials of the wild and domesticated forms do not differ, and I am satisfied from my observations of the latter that actual feeding does not take place. During two years which I spent in the Army Pigeon Service, I took great interest in this matter and watched the performance very closely at a distance of about two feet on certainly scores and probably hundreds of occasions and with different pairs of birds. The female inserts her bill, but it is not opened when in the male's throat as a young bird's is. The convulsive movements of neck and crop are very much less than those used to disgorge food when feeding young, and, such as they are, are often taking place almost simultaneously in both male and female as their bills are together. The female's bill is wet as it is withdrawn and she appears to swallow. It is just possible that a little water or some liquid may pass between them (it is noticeable that if pigeons which have sat only a week or so are given a new-hatched young for a day or two they fill its crop with a watery and evidently useless fluid before they manage to secrete the proper "soft-food."), but I think the entire "feeding" is as much a purely symbolic ceremonial as the false-preening that precedes it.

I have often picked up a hen pigeon at the moment she withdrew her bill and "swallowed" and there was never food in her throat, as would have been the case with a young bird that was being fed. I have separated a pair, and put them together after allowing the male to fill his crop with peas and the female only to eat a very little small grain, and after the pre-coitonal ceremonial had taken place several times, there was not a single pea in the female's crop. I may add that my previous opinion, based on more distant and less precise observation, was that feeding did take place and I was confident that close attention would prove the fact; instead it disproved it. I feel the more confident in expressing my ideas on the subject as anyone can check my observations at the cost of a pair of common pigeons.

I have never seen in any ornithological books any mention of the "driving" of the female by the male which is such a feature of tame Pigeons and is certainly indulged in by *Columba livia gaddi*, and almost certainly by all the other truly wild forms. It is not possible to interpret this as frustrated attempts at coition, since this has taken place prior to the driving stage, and the male does not attempt to mount the female during this period. Most pigeon-keepers say that the male is trying to drive the female to the nest-site; certainly if she enters the nest-box he seldom continues to

peck at her there, but if there was any deliberate effort on his part to get her to the nesting place he would surely call her to it, as he has done so many times with success prior to the start of the driving stage? There is no such behaviour with Turtle or Domestic Collared Doves in captivity, nor, I think, with Stock-Doves (*Columba ænas*), although as my close observations of this species were confined to one pair I cannot generalize from these. In two pairs of Palm-Doves (*Streptopelia senegalensis*) that I kept in Egypt this "driving" phase was very intense, the male birds tearing feathers from the females' backs and heads and striking them with their wings; indeed had not shelters, that the males apparently feared to enter, been provided, I think they would have killed the females. With these birds, the behaviour more resembled the sexual chases of some passerines, as only a suggestion of nesting preliminaries had taken place before it started, but at least in one pair, and no doubt in both, coition had occurred prior to it. This stage ended suddenly and with no apparent signal; one moment the male was ferociously chasing his mate (as he had done for 12 days, during which she had spent most of the time hiding in a corner behind a corn bin); on her next appearance she flew to the nest-site and both commenced fondling each others' heads and cooing. In this pair the "driving" stage ended about 10 a.m., and the first egg was laid on the evening of the fourth day from this.

NOTES.

RARE MIGRANTS IN THE TRENT VALLEY,
NOTTINGHAMSHIRE, 1945.

DURING a continuation of observations on migration in the Trent Valley near Nottingham in 1945, the following species were noted, most of the records being the first for the county and therefore worthy of record.

ICTERINE WARBLER (*Hippolais icterina*).—An adult was seen perched on telegraph-wires by the Trentside, at Colwick, on July 13th. It remained on its perch giving snatches of song, for some minutes and then dived into a dense bed of Persicaria, where it could be heard, but only glimpsed occasionally. The impression gained was as follows :—a large greenish-yellow warbler about the size of a Whitethroat ; short greenish-yellow eye-stripe ; olive or yellowish-green head, back and tail-coverts ; throat, breast and whole of belly bright greenish-yellow almost as bright as that of a Yellow Wagtail ; wings and tail greeny-brown ; legs very dark, but the exact colour not determined ; bill light brown or flesh-coloured ; wings fairly long and pointed, the flight and action recalling a Whitethroat.

The song in its main substance resembled a Reed-Warbler, but was interspersed by high notes, screechings and Whitethroat-like guttural sounds. When in the persicaria it gave "hoo-eet" notes and frequently a sound like the alarm-note of a Whitethroat.

The pointed wings and the character of the song would point to the bird's being definitely this species and not the Melodious Warbler (*H. polyglotta*), which is in any case much rarer and less probable. The place where it was seen is an area overgrown with tall weeds which is much frequented by small birds at the period of migration, with a young mixed copse on the other side of the river.

DOTTEREL (*Eudromias morinellus*).—A party of five, two moulting adults and three juveniles, were seen with Lapwing on a ploughed strip of the Sewage Farm on August 14th. The characteristics of the species were well seen, including size between Ringed and Golden Plover, broad buff-white eye-stripe, and thin white line separating the brownish breast from the chestnut belly in the adults ; the young were browner and lacked the chestnut.

WHITE-WINGED BLACK TERN (*Chlidonias leucopterus*).—An adult in moulting summer plumage was watched for some time on the Sewage Farm on September 2nd.

Description was as follows :—Head white with dusky shading on the crown and a black spot in front of the eye, another behind it, body was light grey with some black feathers left on the breast in tiny patches, the upper surface of the wing was light grey, slightly darker on the coverts, the first primaries had black tips, the under surface of the wing was like the upper, but the whole of the under wing-coverts were black with a few grey ones appearing ; the tail

was white on both surfaces. Bill and feet were red. (R. J. & T. W. Raines, J. Staton, M. P. Winser).

GULL-BILLED TERN (*Gelochelidon nilotica*).—A party of five came down at a gravel-pit in the Trent Valley on September 6th. They scattered and flew over the water for a few minutes, presumably feeding, before collecting into a flock again and departing. One was an adult in half completed moult, two adults in either winter or later moulting plumage, two were immatures. They were large terns, compared with Black-headed Gulls, about the same length but slightly longer in the wing, flew with recognizable tern wing-beats, but were much stockier and more gull-like than any other terns ; combined with this they had thick black bills, shorter and thicker than those of Sandwich Terns and without yellow tips, and only a slight fork in the tail, making them even more gull-like. Their general plumages resembled the Sandwich Tern at similar stages, crown of moulting adult black with white, grey sprinkled fore-head ; the other adults had white heads sprinkled with black ; juveniles had white heads sprinkled with grey and brown shading on the wings.

During the whole time they were in view they were calling excitedly. I put down the calls which I heard as sounding like "kurruck swee, kurruck swee", the first note being obviously made by the adults, while the second I supposed to come from the juvenile immatures. However, as a note of the sort indicated does not seem to have been recorded for young or adult Gull-billed Terns, it is possible that the "swee" notes did not come from these birds at all, but from young Black-headed and Common Gulls which were in the air at the same time and were almost constantly mobbing the terns.

I should add that I am thoroughly familiar with Sandwich Terns and their note.

ROSEATE TERN (*Sterna d. dougallii*).—An adult was seen on the Sewage Farm on May 21st. It was quite tame and allowed approach to within twelve yards before flying. When on the ground the pink flush on the breast was quite distinct and the bill was noted as black with a red base, much slenderer than that of a nearby Common Tern. In flight was even more graceful than a Common Tern and the great length of the tail streamers was apparent.

R. J. RAINES.

JACKDAW CARRYING YOUNG THRUSH IN CLAW.

On May 22nd, 1945, in Queen's Park, Chester, I saw a Jackdaw (*Corvus monedula spermologus*) in flight with a young thrush held firmly in its right claw. A pair of Mistle-Thrushes (*Turdus v. viscivorus*) and a pair of Song-Thrushes (*Turdus e. ericetorum*) were in hot pursuit. Both pairs of thrushes had nests containing young in the vicinity. Although I was near enough to see the spotted breast of the young bird, I could not be certain to which species

of thrush it belonged. The Jackdaw was buffeted by one of the Mistle-Thrushes until he was knocked downwards on to the roof of a house. However he stuck to his booty and eventually made good his escape by dodging between some chimney pots. Although the Mistle-Thrushes were more aggressive than the Song-Thrushes in their pursuit of the Jackdaw, I rather think that the victim was a young Song-Thrush.

The point which interested me most was that the young thrush was held in the Jackdaw's claw and not in his beak. I have never seen this before. It looked as though the Jackdaw was keeping his beak free to fight off the attacks of the angry thrushes.

T. S. WILLIAMS.

SISKINS IN WESTMORLAND IN SUMMER.

In view of the increase in the numbers of Siskins (*Carduelis spinus*) in Dumfriesshire, recorded in *British Birds* (antea, p. 53), it may be of interest to mention the presence of this species in two successive breeding-seasons in the Ullswater area.

During the period July 17th-24th, 1944, single birds regularly passed over a lakeside field in which I was camping, and on one occasion three were seen together in the top of a tall fir.

In late April, 1945, birds were again present in this and also in another lakeside locality where one sang repeatedly from the top of a *Sequoia*, and, occasionally, in flight.

It appears from *The Birds of Lakeland* (1943) that the Siskin has in the past been of very rare occurrence in the breeding season, in Westmorland.

M. G. ROBINSON.

ARCTIC REDPOLLS IN NORTHUMBERLAND AND NORFOLK.

In the afternoon of November 10th, 1945, while I was walking round Hallington Reservoirs, Northumberland, with Dr. T. F. Hird, we observed two small, very strikingly pale birds flitting about and feeding on the heads of some thistles. They allowed us to approach so closely that we were able to see, with binoculars, every detail of their plumage. They were undoubtedly Redpolls of the arctic species *Carduelis hornemannii*, and from their size and whiteness I believe them to have been of the typical form or Hornemann's Redpoll (*C. h. hornemannii*), which breeds in N.W. Greenland, rather than Coues's Redpoll (*C. h. exilipes*). Their most striking features were their white, unstreaked rumps and the broad white bars on their pale brown wings. Their breasts were pale and not suffused with red. Both birds had the unstreaked white rump and were noticeably paler than any Mealy Redpoll (*C. f. flammea*) ; but one was even whiter than the other. The only colouring visible on the head of this bird, when viewed 'full-face,' was the dark red patch on the forehead and the black bib under the bill, which appeared to be encircled with white, for the crown, cheeks and

upper breast were almost pure white in contrast. The back, from the nape to the pure white rump, was very pale, though marked with darker streaks. They appeared to be of the same size as the Mealy Redpoll, and certainly not smaller. As the birds flitted before us, below eye level, we were able to see their colouring when in flight as well as when perched on the thistle-heads. On returning to the spot later in the day, as it was becoming dusk, we again saw the two birds, this time moving about like little white ghosts in the gloom.

On examining the specimen of Hornemann's Redpoll in the Hancock Collection at Newcastle-on-Tyne, (Whitburn, Co. Durham, 1855, the first British record), I have no doubt that the birds we saw were of the same species, and in all probability of this race.

GEORGE W. TEMPERLEY.

ON November 3rd, 1945, on Stiffkey Greens, Norfolk, I observed a redpoll on the dead seed heads of the Sea Wormwood (*Artemisia maritima*). I was several times within a few feet of it and was struck by the white rump and underparts and the general light colour of the bird. The following day it was in the same place and I was able to study it in a better light. I am convinced that it was a Horne-mann's Redpoll either of the typical form or of the Coues's race. It was very small, which seems to point to Coues's.

I reported this in a letter to *The Field*, which was published on December 15th and I have since received from the keeper of the Yorkshire Museum three skins for comparison. They are Lesser, Mealy, and Coues's and I have no doubt or hesitation in picking out the Coues's as the one I saw. My bird was even whiter than the specimen skin and I suggest that this is attributable to the specimen having been shot in July, while my bird was seen in November recently out of its autumn moult.

A significant feature of my bird was that it did not mix with a flock of about 30 redpolls which were in its immediate neighbourhood.

C. E. HAMOND.

[It is inconvenient that there is no collective species name to cover the two races of *Carduelis hornemanni*, the so-called Horne-mann's and Coues's Redpolls, and we have ventured to introduce the term Arctic Redpoll for the purpose. The characters noted by the recorders clearly establish the specific identifications, but we do not think the races can be safely differentiated in the field. We note that in both cases the birds were particularly white and that Mr. Temperley favours *hornemanni*, which is the whiter form, but his impression that his birds were the same size as Mealy Redpolls is quite consistent with their having been *exilipes*, *hornemanni* being generally larger, while Commander Hamond's bird actually appeared noticeably small. We think it probable that the birds in both cases were Coues's Redpoll; which breeds in Lapland and North Russia, and the fact that both observations were made on the east side of England is consistent with this.—EDS.]

YOUNG BIRDS RETURNING TO NEST.

I WAS interested to read Mr. D. R. Anderson's note (*antea*, p. 26) on young Sedge-Warblers returning to their nest after having left it because, in my experience too, this is very unusual. I can give, however, one recent record of similar behaviour.

On May 9th, 1944, I inspected the nest of a Grey Wagtail (*Motacilla c. cinerea*), which held three feathered young. On the evening of the 10th, only one young was in it and I could not find the other two. On the evening of the 11th, there were three young in the nest again. On the 12th, they had all flown. This incident is recorded in the 14th Report of the *Cornwall Bird Watching and Preservation Society*, p. 14.

I also clearly remember, one morning many years ago, startling a brood of Greenfinches (*Chloris ch. chloris*) and causing them all to flutter out of the nest and disappear among the bushes. The same evening, when passing the nest, I noticed to my amazement that it was packed again with young.

B. H. RYVES.

SUN-BATHING HABIT OF JUVENILE GREAT-TITS.

DURING hot weather between July 11th and July 15th, 1945, I observed two juvenile Great Tits (*Parus major newtoni*) sun-bathing in my garden. It would appear that the hot sun and very dry earth encouraged these birds to develop a habit which was perhaps started when they were taking a dust-bath in the sun-baked soil.

While sun-bathing the birds lay motionless, breast to the ground, wings stretched out to the full, and tail feathers spread. On looking through field-glasses it could be seen that every feather on the back was puffed out. The breast seemed to be pressed tightly into the warm earth and the whole body appeared to be palpitating slowly. This sun-bathing position was assumed for about a minute at a time, after which the bird flew to a branch and commenced to preen its plumage.

The writer has always been under the impression that really hot sunshine caused distress to many birds, but it was quite obvious that these juvenile tits were enjoying the experience.

T. S. WILLIAMS.

[We do not think sun-bathing is really uncommon in Passerine birds, though little has been recorded about it and unless birds are tame or can be closely watched without their being aware of it, it is probably easily overlooked. In *Die Vögel Mitteleuropas*, Vol. i, O. and M. Heinroth, who reared a great many of the birds of central Europe in captivity, give photographs of a wide range of Passerine species thus occupied, namely Hawfinch, Snow-Finch, Wood-Lark, Pied Flycatcher, Black Redstart, White-spotted Bluethroat, Swallow and Sand-Martin. All the birds figured have the wings more or less spread and in some cases have assumed notably odd postures.—EDS.]

CONTINENTAL GREAT TIT IN KENT.

ON October 15th, 1945, Dr. Norman Joy sent me a Great Tit which had crashed at the Dungeness Light some four days previously. This bird he correctly considered to be an example of the Continental race (*Parus m. major*). At the time of sending the bird to me he tells me there were two others frequenting the Light House gardens.

In a recent investigation into the status of the British and Continental races (*Bull. B.O.C.*, Vol. lxvi, pp. 24-28) I have shown that in actual measurements of the bills these two forms can be satisfactorily separated. In addition to the above specimen I have found in going over a series of British examples a further one, a female, a bird of the year, taken on September 29th, 1937, near Westerham. The following measurements were obtained from these two birds:

? sex (undeterminable on account of decomposition) *circa* October 11th, 1945, Dungeness Light, Kent.

✓ w.=74 mm.

bill : length = 12 mm. Culmen strongly decurved.

width = 5.5 mm.

depth = 4.5 mm.

bill co-efficient = 24.75.

♀ 1st winter, September 29th, 1937, near Westerham, Kent.

w.=75.5 mm.

bill : length = 9 mm. Culmen decurved.

width = 5 mm.

depth = 5 mm.

bill co-efficient = 25.

JAMES M. HARRISON.

GREENISH WARBLER IN SHETLAND.

ON September 12th, 1945, I observed a small green warbler feeding busily in a cabbage patch surrounded by a dry-stone dyke near Skaw on Whalsay. On getting a very close view of it perching on top of a cabbage, I noticed that it had a single light wing-bar. It was feeding on insects under the cabbage leaves and was very restless, but not shy. It somewhat resembled a Willow-Warbler but carried its tail higher off the line of the back ; the head was set more erect, and it looked shorter than a Willow-Warbler.

Knowing that it was something unusual, and being unable to identify it for certain in the field, I obtained it and preserved the skin.

The specimen has a yellow eye-stripe and a single yellow wing-bar on each wing ; it has olive-green upper-parts and light under-parts, almost white under the belly. Wing length 59 mm.; wing formula 3rd to 6th emarginated ; 2nd primary between 7th and 8th. Upper mandible of bill dark ; lower mandible yellow-horn. Unfortunately the organs were damaged and I was unable to sex it.

This is apparently the first occasion on which the Greenish Warbler (*Phylloscopus trochiloides viridanus*) has been recorded in Scotland and is the second record for the British Isles. Both Messrs. G. Theo Kay and George Waterston have examined the skin and have confirmed the identification. SAMUEL BRUCE.

[This bird was exhibited by Mr. Waterston at a meeting of the British Ornithologists' Club on November 21st, 1945.]

DISPLAY OF BEE-EATER.

IN May, 1944, a few observations were made on the displays of the European Bee-eater (*Merops apiaster*) at a nesting ground in southern Palestine.

1. May 11th. 16.25 hours. A Bee-eater 'X' was sitting on a weed stalk. To the tune of a volley of grunting whistles a second bird 'Z' flew down to it. 'X' fluttered its wings. 'Z' perched a couple of feet away with its back towards 'X,' raised and widely spread its wings above its back and shivered them and its whole body and tail in a glitter of rust-red, green and blue. 'X' took wing, made as though to fly to 'Z' and then rose into the sky and flew away.

2. May 12th. 17.02 hours. A Bee-eater had flown to perch beside another on a wire; the two birds turned their heads inward and each gave one small gape.

3. May 12th. 17.04 hours. A pair of Bee-eaters sat side by side on a wire, facing in the same direction, and shivered their tails while whistling in duet.

4. May 22nd. 8.32 hours. A Bee-eater sitting on a wire greeted another with wings a little open at the carpus and strongly trembled.

European Bee-eaters also perform a simple communal display flight.

1. May 4th. 17.10 hours. Four Bee-eaters were flying round, high up and at great speed, moving in a close group and whistling loudly.

2. May 10th. 14.55 hours. Some 15 birds were flying round and round in one close group, which traced wide circles in the sky. They kept more or less to one level, flying with wide-spread wings and tails to the tune of grunting whistles.

These communal flights are not confined to the nesting areas. At 13.05 hours on April 23rd, 1944, a party of about 30 Bee-eaters were ringing round and round, anti-clockwise, in a close, globular group, 200-300 feet above the desert near Helwan in Lower Egypt. The group gradually drifted south-east before the breeze. The direction of spring migration flight in this area is north to W.N.W.

P. H. T. HARTLEY.

[We think the communal flights of these very social birds must have been witnessed by many observers, but we believe that the individual display actions described by Major Hartley are now recorded for the first time.—EDS.]

THE GREAT SPOTTED WOODPECKER IN NORTH-EAST SCOTLAND.

As there seems to be some uncertainty regarding the present distribution of the Great Spotted Woodpecker (*Dryobates major anglicus*) in the north-east of Scotland, the following notes may be of interest.

In 1945 we found nests in the following localities :—Near Woodhead, Fyvie ; at Hatton Castle and Muiresk House, Turriff ; and in Duff House grounds, Banff. In 1943 a pair nested unsuccessfully close to Turriff ; and we are reliably informed that a pair nested for several years after 1920 at Delgaty, Turriff. It also nested in the grounds of Huntly Lodge, Huntly, in 1944 according to the local gamekeeper. GEORGE WATERSTON AND ADAM WATSON, JUN.

TAWNY OWL NESTING IN FACTORY WALL:

IN May, 1944, a Tawny Owl (*Strix aluco sylvatica*) was discovered nesting at the bottom of a square hole cut in a factory wall to allow the passage of a heavy revolving shaft. Machinery situated in an upper storey within fifteen feet of the nest set up a continuous vibration, above the noise of which it was difficult to hear oneself speak. A large chain, moving constantly through the aperture in the wall, passed less than two inches above the head of the incubating owl ; it was in such a position that the bird was compelled to crouch in order to pass beneath it when entering or leaving the nest, which consisted of a mass of raw cotton collected from nearby storing yards.

Two eggs were laid and were brooded steadily for several weeks, during which time the nest was visited and photographed by scores of workers, who were allowed to view it on payment of a fee. Consequently the sitting bird was disturbed several times an hour ; yet it never showed any sign of anxiety, merely turning its head when the sliding door to the aperture was removed. Although the eyelids were open the nictitating membrane always covered the eye when the bird was first seen, only being withdrawn occasionally during the visit. These constant disturbances may account for the fact that the eggs were deserted after seven weeks. The bird was absent from the nest only for short periods during the day, and two birds were never observed together.

It was probably the same owl which displayed remarkable tameness several weeks after the desertion, when, perched at dusk upon a wooden post, it allowed me to approach to within a foot, and remained motionless during a long scrutiny.

The events described took place at Rawtenstall, Lancashire.

JOHN CASSIDY.

GOSHAWKS IN NOTTINGHAMSHIRE.

IN the early part of 1945 a large round-winged hawk was seen by various observers on several occasions on the Nottingham Sewage Farm, but no details were obtained until on March 16th Mr. B. K. Montgomery and the recorder had good views of a hawk

soaring above them, which was believed to be a Goshawk ; however it could only be considered as a "probable."

On April 11th, while carrying out a survey for Wood-Larks near Oxton, about six miles from the Sewage Farms, I again found a pair of these birds and watched them displaying for well over an hour. I was able to compare the male with a male Sparrow-Hawk and also with Crows and other large species. The male completely dwarfed the Sparrow-Hawk, which it otherwise much resembled, and appeared about the same size in wing but longer in total length than Crows, several of which endeavoured to mob him during the period of watching. The female was considerably larger than the male. Both birds had Sparrow-Hawk-shaped wings and very long tails (the female had the outer tail-feathers about 2 ins. shorter than the rest), they were dark grey-brown on the upper-parts, heavily barred on the breast, had four broad dark bands on the tail and were barred on the under-wing. The barring ran across the secondaries and curved up round the bases of the primaries ; the under wing-coverts were profusely marked with fine barrings tending to form parallel lines.

In the display behaviour observed the female appeared to take the major part and she always seemed to be at a greater height than the male. The commonest performance was for one bird to soar round in circles, sometimes with tail spread, sometimes closed : the other bird would then swoop repeatedly at the soaring one, from any direction, always missing it by a good margin. The "attacking" bird varied this performance by long swoops, glides, twists and turnings prior to the swoop. At other times the male would dash about fairly low over the ground or trees, while the female soared high above. All other displays were performed by the female, the commonest being a long swoop preceded by a slow flapping and gliding flight and ending in an upward glide. When the upward impetus was lost the bird seemed to fall out of the glide, making no effort to beat the wings. Sometimes she looked as though she would perform a somersault in the air and on one occasion she soared to a height at which she looked no bigger than a Swift and then came down in a great peregrine-like dive, flattening out above a pigeon and gliding straight into a conifer plantation. The male often uttered a mewing note during the display.

A feeding perch, perhaps belonging to these birds, was found, in which there were the remains of several small birds and a fully-grown Rabbit. The male was seen again in the district on April 18th ; it attained an astonishing speed when flushed.

The presence of the birds in March and April naturally suggests the possibility that they may have nested, or attempted to do so, in this well-wooded district. No evidence of this was obtained, but for various reasons a really exhaustive search was not possible. The area where they were seen was, however, fairly exhaustively covered on April 22nd, and the birds were not seen.

R. J. RAINES.

DISPLAY FLIGHT OF CORMORANT.

PROLONGED soaring flights of presumed pairs of Cormorants (*Phalacrocorax c. carbo*) have been twice recorded (*antea*, Vol. xxxvi, pp. 19 and 114). On February 12th, 1946, two birds at Low Wray, North Lancashire were seen to perform a short but acrobatic display flight.

At 9.11 hours, two Cormorants were flying down to Windermere from the westward, gliding side by side, on set wings, at a height of about 200 feet. The right-hand bird suddenly made a short dive downward and then turned over on its back, dropping the outside wing. It righted itself by a half-roll to the right. A moment later the left-hand bird turned on its back, also dropping the outside wing and returning to a normal position by a half-roll to the left. After gliding a short distance side by side and only a length apart, the two Cormorants turned on their backs simultaneously. Each bird dropped the outer wing and rolled inward, the right-hand bird dropping a little below the other: then, with half-rolls outward, normal gliding flight was resumed. Next they tilted over until their wings pointed vertically up and down and their bellies were turned inward, and, after shooting forward a little distance in this position, they returned to flight on even keels and went down out of sight behind the trees.

In these sideways rollings, in which each bird turned its belly towards its partner, the white thigh patches must have been displayed with more prominence than they receive in performances at the nesting sites.

P. H. T. HARTLEY.

TURNSTONES USING ELEVATED PERCHES.

I WAS interested to read Mr. B. A. Richards's note under the above heading in *British Birds* (*antea*, p. 30) since I have recently had experience of similar habits in the Turnstone (*Arenaria i. interpres*) in the Eastbourne district. On December 13th, 1945, I met with a party of 11 of these birds to the east of Langney Point. On being put up, the whole party, after circling round, alighted in a row on just such a "short isolated section of tubular metal beach defences" as Mr. B. A. Richards describes. I visited the same locality again on December 25th, 1945, and found that there were then 15 Turnstones together with a Purple Sandpiper (*Calidris m. maritima*). All these birds, including the Purple Sandpiper, perched on several occasions on the tubular metal beach defences as before. A third visit, on January 3rd 1946, found the same 16 birds present and once again all of them perched on the metal tubing.

I may say that all three visits took place when the tide was high. The topmost bar seemed most favoured as a perch.

D. D. HARBER.

[It seems clear that wherever Turnstones have the opportunity of using these perches they readily do so, bearing out our suggestion (*antea*, p. 30) that the absence of British records hitherto was largely

due to the absence of suitable perches in most Turnstone haunts. We have also received from Mr. D. H. Thompson a record of a flock of Turnstones resting on a stone ledge of Berwick-on-Tweed pier about 15 ft. above high water, but such a resting place is equivalent to an elevated rock ledge from the Turnstone's point of view and hardly in the same category as the type of perch under discussion, elevated above all its surroundings.—EDS.]

GREENSHANK "UP-ENDING."

ON September 15th, 1945, at Wilstone Reservoir, Tring, I watched five Greenshank (*Tringa nebularia*) feeding in a manner which does not appear to have been recorded. In pursuit of a shoal of fry they went out of their depth, but all continued the chase by "up-ending." They did this with rather more bounce or spring than a duck, so that in extreme examples only the body from the vent backwards remained above water.

H. MONEY-COUTTS.

LAPWING'S CLUTCH OF SIX EGGS.

(see Plate 20).

As the normal clutch of eggs for the Lapwing (*Vanellus vanellus*) is four or exceptionally five (*Handbook*, Vol. iv, p. 398) we think that the following record may be of interest.

On May 28th, 1944, a Lapwing was observed to fly up ahead of us and we discovered a nest containing four eggs. This was on moorland at Gorple, Yorkshire. This nest still contained this clutch when observed on June 4th, and again on the 12th, but when we next had the opportunity of visiting it on the 20th, to see whether the young had hatched, we were surprised to find that there were six eggs. Close examination revealed that each of the eggs was of very similar colouration and quite distinctive from the other Lapwings' eggs in the immediate locality. This does strongly suggest to us that the eggs were all laid by the same hen, though it is difficult to understand the reason for the long interval between the laying of the first four eggs and the last two.

SYDNEY COCKROFT, GEORGE EDWARDS, ERIC HOSKING
AND EDWARD WATSON.

PROBABLE LESSER KESTREL IN SUSSEX.—*The Field* for May 12th 1945, p. 481, contains a note from Mr. T. C. Hayward stating that "some weeks ago" at Easebourne, Midhurst, Sussex, he observed with field glasses at about 30 yards range a hawk which he was satisfied was a male Lesser Kestrel (*Falco naumanni*).

We have been in communication with the recorder, who kindly informs us that the bird in question was seen perched on low tension electricity cables which ran about 30 yards from the house. He was able to get a fairly powerful pair of field-glasses and to study it for some four or five minutes, making a very careful mental

note of its colouring, etc. The bird was perched with the sun shining on its back. It showed a complete absence of spots on the mantle and the head and tail appeared a kind of blue with the sun shining on them. Unfortunately as it had its back to the observer the colour of its claws could not be seen.

Mr. Hayward writes that he is quite familiar with the common Kestrel and that the bird was definitely not this species. He adds that the colouring of the Lesser Kestrel in plate 64 of *The Handbook* is very near in its colouring to that of the bird he saw and leaves absolutely no doubt in his mind on the subject. We think that his evidence establishes a good case for the correctness of his identification, but that in view of the similarity of the two species and the fact that the whitish claws were not seen the record should be considered as "probable" rather than quite certain.

LETTERS.

PA RENT BIRDS PROBING AMONGST BROOD IN NEST.

To the Editors of BRITISH BIRDS.

SIRS,—Mr. N. D. Pullen, Mr. H. G. Hurrell and Miss N. C. Hicks (*antea*, Vol. xxxviii, pp. 206, 300 and 360) have drawn attention to an interesting problem of behaviour.

I have observed the "digging" in the bottom of the nest, as described by the above writers, at the nests of Raven, Chough, Greenfinch, Goldfinch, Chaffinch, Cirl Bunting, Spotted Flycatcher, Goldcrest, Mistle-Thrush and Blackbird, from which it seems, as the Editor suggests, the behaviour may be common to many species.

I suggest that the "digging" may be for any of the following purposes :—

- (1) The eradication of insects (*vide* Miss Hicks).
- (2) Inducement to the young to evacuate faeces.

(3) To prevent the bottom of the cup becoming a solid "floor" (*vide* Mr. Hurrell) in order that the "scurf" shed by the young may percolate freely through the lining into the materials below, instead of lying in a thick "dust-heap" (young Montagu's Harriers, as soon as strong enough, leave the nest for "runs" in which they shed their down and "scurf").

(4) To move the positions of the feet of the young in order to lessen the risk of their becoming entangled in the lining, especially if that consists of hair, fine bents and the like* (I have records of a nestling Blue Tit and a nestling Greenfinch being hopelessly imprisoned through entanglement with materials. After releasing (with much difficulty) these two young birds, I found their legs greatly swollen through, I presume, their vain struggles to free themselves.

B. H. RYVES.

*Mr. Pullen's statement, in reference to "digging," seems significant here; it reads "The only obvious result was thorough disturbance of the brood."

SIRS,—With reference to Miss N. C. Hicks's letter in Vol. xxxviii, p. 360 of *British Birds*, I would like to put forward my observations as a bird photographer of nest "airing" as seen carried out by certain species during my spells in hides.

The species I have seen carry out this procedure include Grasshopper-Warbler, Goldfinch, Spotted Flycatcher, Chaffinch, Common Snipe, Redshank, and Sparrow-Hawk. In all the above cases nest airing was witnessed when the nest contained young, except in the case of Common Snipe and Redshank, in which it took place during incubation.

In the case of the first four species mentioned, the procedure has followed a feed, the young having been pushed on to one side by the adult bird and three or four parts of the nest have been aired. The method has been to work from near the bottom on the inside, and, after probing the bill into the nesting material, much head shaking has taken place in an upward movement. Only in the case of the Spotted Flycatcher have I seen it carried out from the outside of the nest. In the case of the Common Snipe and Redshank it has been carried out on returning to incubate, following the turning of the eggs and before pulling over grasses to offer extra cover for concealment.

When carried out by the Sparrow-Hawk, the female was the only one seen to do this, and the method was to tug away at an underneath stick which was inter-locked with several more on top. By pulling away at this underneath stick the upper ones would be disturbed and in some cases the top-most ones were seen to fall off the platform.

During all cases witnessed, the weather has been very hot and sunny and where young were in the nest, the parent birds would always settle down to brood after carrying out the nest-airing procedure.

In my experiences I have never seen it carried out by Garden-Warbler, Blackcap, Common or Lesser Whitethroat. I mention this especially in view of the loosely constructed type of nests of these species, which in my opinion are self-ventilating.

In view of the case of the Common Snipe and Redshank, where young had not hatched, and that of the Sparrow-Hawk, where an unobstructed view was obtained, I feel there is no question of removing feather-scale or insects and vermin, but the procedure is purely one of ventilating the nest during hot weather prior to brooding, or incubating. STANTON WHITAKER.

P.S.—I have a photograph of the Grasshopper-Warbler carrying out this procedure.

DELAYED HATCHING OF EGGS.

To the Editors of BRITISH BIRDS.

SIRS.—The capacity for survival of embryos in the eggs of wild duck and game birds has always been a source of wonderment to me. It is common knowledge that when frequently disturbed, as commonly happens, their eggs are left wet and cold, often for many hours on end, and yet they hatch out more satisfactorily than in an incubator or when placed under a broody hen.

In May, 1945, I had a sitting of nine domestic duck eggs under a hen. After brooding satisfactorily for one week she deserted and I found the nest two days after scratched out and the eggs wet and stone cold. A second hen was then procured, but after a fortnight's incubation she, too, followed the example of her predecessor. Nothing daunted, I then brought a third hen to the task. She proved more dutiful, but the eggs showed no sign of hatching at the completion of the normal term, nor was there any evidence of addling apparent.

On the 42nd day of incubation, I opened two eggs and found three-quarter grown ducklings alive inside the shell. Eventually on the 53rd day of incubation two were hatched. The embryos in the remaining five eggs were dead and decomposing, but all were fertile.

Of these two ducklings one survived and is now a fine Aylesbury duck.

It may be argued that the four viable eggs out of the nine had not been completely covered by the three fosterers and that they therefore had escaped incubation for three weeks, but this was certainly not the case, because I made it a habit of inspecting the sitting bird every night to observe that all was proceeding normally.

I have no satisfactory explanation to offer, save that duck embryos are capable of surviving for considerable periods in a state of suspended animation. The facts related are absolutely authentic and they should serve to encourage others, in a similar situation, not lightly to discard apparently deserted eggs, but to give them another chance. PHILIP MANSON-BAHR.

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ASSISTED BY

NORMAN F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

AND A. W. BOYD, M.C., M.A., F.Z.S., M.B.O.U.

CONTENTS OF NUMBER 6, VOL. XXXIX., JUNE 1, 1946.

	PAGE
Further Notes on the Breeding of Blue Tits. By N. D. Pullen	162
Birds of Inner London. By G. Carmichael Low and Miss M. S. van Oostveen	168
Report of the Bird-Ringing Committee: Progress for 1945. By A. Landsborough Thomson, C.B., D.Sc.	171
Studies of some Species rarely photographed. V. The Three-toed Woodpecker. Photographed by H. N. Southern.	176
Notes :—	
Corn Buntings in Scilly (Sylvia Lloyd)	177
Marsh-Tits in Berwickshire (Major the Hon. H. Douglas-Hamc)	177
Waxwings in Inverness-shire, Sutherland, Aberdeenshire, Cumberland and Yorkshire (Richard Perry, Dr. J. W. Campbell, Adam Watson, St. John R. B. Walsh, A. H. Betts, C. E. A. Burnham)	177
Young Willow-Warbler returning to nest (J. Staton, Miss N. C. Hicks)	178
Courtship feeding of Mistle-Thrush (M. Brooks-King, Lt.-Col. B. H. Ryves)	179
Iris and bill coloration of Hedge-Sparrow (P. A. Clancey)	179
Barn-Owls roosting in conifers (John Ash, J. Walpole-Bond)	180
Aggressive behaviour of Peregrine (Ralph Bond)	180
Kestrel following plough (A. W. Boyd, Dr. Stuart Smith)	181
Marsh-Harrier preying on Green Woodpecker and Water-Rail (T. C. Gregory)	181
Glossy Ibis and Pink-footed Geese in Co. Wexford (John Barlee and Major R. F. Rutledge)	182
Coition of Mute Swan on land (Alex S. Thom)	182
Display of Mute Swan (A. W. Boyd)	182
Ferruginous Duck in Northamptonshire (R. J. F. Taylor)	183
Surf Scoter in Northumberland (F. Brady)	183
Eastern Turtle-Dove in Norfolk (B. B. Rivière)	184
Turnstones using elevated perches (R. G. Adams)	184
Food-washing habit of Curlew-Sandpiper (Fr. Haverschmidt)	184
Temminck's Stints and other waders in Anglesey (C. F. Tunnicliffe)	185
Bonaparte's Sandpiper seen in Kent (John Voysey)	186
Flock of Spotted Redshanks in Sussex in winter (J. Ashbee)	186
Kentish Plovers in Northamptonshire, Northumberland, and on Leicestershire-Rutland border (I. J. Ferguson Lees, F. Brady, A. E. Jolley)	187
Black-winged Stilts in Cambridgeshire and Lancashire (A. S. McLean and R. J. Raines, A. W. Boyd)	189
Arctic Tern and Kittiwake breeding in Scilly (E. J. M. Buxton)	190
Little Gull following plough (Miss R. M. Roper)	190
Probable Brünnich's Guillemot in Co. Dublin (Rev. P. G. Kennedy)	190

Short Notes :—

New work on the Birds of Lancashire. Hawfinch as prey of Sparrow-Hawk.
Gait of Corn-Bunting. Early July emigration of Swifts. Montagu's Harriers in Herefordshire. Whooper Swans in Warwickshire. Flock of Black-tailed Godwits in Hampshire in winter. Black-tailed Godwits on the Severn. Great Skuas off Cheshire coast. Pomatorhinus Skua off Anglesey

... ... 191

laying of the ninth egg on April 26th. The record however, provided no evidence in support of this; and in fact the visits to the nest remained normal until about 1 p.m. of the following day—*i.e.* after the tenth had been laid. There was then a definite change in the form of the record, indicating that the hen was now remaining to brood; also several visits by the cock to feed her (some of these confirmed by observation). The hen, however, was still unsettled and was away from the nest from 3.50 p.m. till 5.20 p.m.

What later proved to be the regular routine started the next morning, when the eleventh and last egg was laid. The most that can be said, therefore, is that incubation commenced somewhere between the laying of the last egg and the last but one: most probably about half way between, preceded by a short period of irregular brooding, which has been noted by Ryves in connexion with other species.

The first egg hatched at about 8.30 a.m. on May 10th; and four more chicks were out by 6.0 p.m. At 6.0 a.m. the next day, four eggs remained; but all (11) had hatched when next the nest was examined at 5.0 p.m. Hatching had therefore extended over at least 24 hours, which gives an incubation period of $13\frac{1}{2}$ days $\pm \frac{1}{2}$ day; with no evidence to show that the last egg hatched any quicker than the remainder.

Hen.

The hen's routine consisted of a fairly regular sequence of on and off periods starting with the first exit at about sunrise,* and ending with the final entrance at about half an hour before sunset. Taken over the whole period, the average "on" was 15 minutes and the average "off" 5 minutes: the maximum "on" recorded being 37 minutes and the maximum "off" 14 minutes, excluding hours of darkness. In many instances, the hen left in response to the cock's call to feed; more often, however, she left on her own—the indication being that food was required about every 20 minutes.

Cock.

The record for April 27th shows that the hen returned to the nest at 4.25 a.m. to lay the tenth egg. She stayed for 28 minutes and there was no interruption. At 1.12 p.m. the hen entered the box and remained to brood for eight minutes; but this time the record shows four visits by the cock with food. This means that a change in the hen's behaviour produced an immediate reaction in the cock, who now brought food, whereas about eight hours before a longer period spent by the hen in the nest caused no such reaction.

*The terms "sunrise" and "sunset" are used in the conventional sense, the controlling factor being the light intensity.

For the next two or three days, the cock continued to feed the hen on the nest ; and it was noted that such feeds generally were given within a minute or so of the hen's return. By about the fifth day feeds on the nest had almost ceased, being replaced by a call to feed on a neighbouring tree. These calls became less frequent, and towards the end of the period the cock was seldom seen.

The change in the situation, *i.e.* hatching, again produced an immediate reaction, as the cock was seen carrying food soon after hatching commenced. The "trigger" in this case might have been the sight of the hen carrying food, although this would not apply to similar changes at the end or beginning of the other periods.

PERIOD IV: FLEDGING.

One of the main reasons for installing the electric recorder was to discover if the rate of feeding of the nestlings noticed on other occasions (*i.e.* about 50 per hour) was maintained throughout the day. If not, what were the variations ?

Feeding commenced within a very short time after the first hatch, as shown by a sudden break in the normal sequence at 8.40 a.m., when movement in and out of the box became quite frequent, especially during the ensuing hour. The nest was inspected at 11 a.m. (1 p.m. D.S.T.), and the hen was seen trying to feed the newly-hatched chick with a small green caterpillar. She did not succeed in this, so ate it herself. At 5 p.m. the cock was also seen bringing food.

On May 12th, when the hatch was complete and the first youngster 48 hours old, the feeds throughout the day averaged 25 per hour. Within two days this rate had risen to 35 per hour, at which figure it remained for the next week—that is, until the end of the blind period. It then rose to about 45, which was the highest average obtained.

Over the day the morning hourly rates were usually above the average, with the low figures in the afternoon and evening ; but contrary to expectation the highest rate was seldom attained during the first hour after sunrise : it was usually reached about 3-4 hours later. The record of feeds for the beginning, middle and end of the period are given in Table I.

For convenience, the rates were calculated by taking the total feeds in each hour starting at nought minutes. Such results, however, are only correct when the record covers the whole day, as with uneven distribution odd periods selected at random can be very misleading.

It is interesting to note that almost identical figures have been obtained for the feeding frequency of [1] Sand Martins (*Riparia r. riparia*), [2] House-Martins (*Delichon u. urbica*), and [3] Swallows

(*Hirundo r. rustica*) in spite of the fact that the nests contained only three or four youngsters against 11 of the tits. Also the rates I have obtained this year are not any higher than the sample counts made last year with a brood of eight. This might indicate that there is a limit to the rate of feeding which the parents can maintain, which means that where the size of the brood is above the optimum either the weight of ration or its nutritive value must be increased or each youngster receives less food. In the present case, I certainly gained the impression that fairly large caterpillars or grubs appeared more frequently than last year.

I was unable, through lack of opportunity, to obtain sufficient data on the method of feeding to confirm last year's results. A few sample counts did, however, indicate that the parents were making few mistakes in their first offer; but on two or three occasions the bird seemed completely bewildered and "offered" to practically the whole brood before being accepted.

I have remarked in my previous notes that at no time was more than one chick fed per visit. This is true where the food is a caterpillar, grub, fly, etc., but is not strictly true for aphides. Owing to a plague of green-fly on a nearby rose-tree, these insects were often collected to form a mass almost completely covering the bird's beak. Occasionally the whole would be offered to, and retained by, one chick; more often more than one offer would be made, some of the insects being left at each offer. These *aphis* feeds were also peculiar in that there was seldom any reaction by the chick; that is to say its mouth did not close. This, combined with the fact that the parent would have some difficulty in deciding when its load had gone, probably explains why such feeds were nearly always multiple ones.

One particularly active period in which there were 42 feeds in 22 minutes deserves mention. The hen was seen to arrive with what was obviously a small piece of bread, and then the rush started with 20 feeds in the next 8 minutes, followed by a pause and then a second rush of 22. The tits had found a loaf near an open window and had raided it. This was when the nestlings were 17 days old.

The hen failed to return to roost on the evening of the 12th day, and neither parent entered the box after the 17th day. After that, all feeds were given at or just outside the hole. It was obvious that something of the sort had to happen as, with the over-crowded state of the box, the parent was seen standing on some of the chicks in order to feed others.

With the change in the parents' position the chicks were of course feeding themselves and there was no question of selection, the chick to be fed having its head through the hole.

All flew on the 21st day.

TABLE I.

Feeding Frequency of Nestlings.

HOUR ENDING (G.M.T.).

Date	5	6	7	8	9	10	11	12	noon.
13/5 3rd day	23	22	14	22	27	16	18	15	First feed
18/5 8th ,,	54	36	45	30	23	32	24	23	,, ,,
25/5 15th ,,	33	33	41	42	56	56	51	53	,, ,,
27/5 17th ,,	19	28	42	41	52	68(1)	41	37	,, ,,

HOUR ENDING.

Date.	1	2	3	4	5	6	7	8	p.m.
13/5 3rd day	35	30	23	22	30	31	31	17	Last feed
18/5 8th ,,	24	20	23	21	24	26	34	15	,, ,,
25/5 15th ,,	48	41	40	42	39	27	39	28	,, ,,
27/5 17th ,,	51	48	31	60	19	33(2)	24	7	,, ,,

	13th	18th	25th	27th
Total feeds ...	396	454	649	601
Hourly average for the whole day ...	25	30	42	41(3)
Intervals over 5 mins.	37	20	11	8 till 3 p.m.
Max. interval mins.	15	11	12	9 ,,

NOTES :

(1) Includes 42 "bread" feeds, see Section IV.

(2) Heavy rain for 4 hours particularly 7-8 p.m.

(3) If rain hours omitted average for rest — 47.

REFERENCES.

- [1] MOREAU, R. E. AND W. M. (1939). "Observations on Sand-Martins at the Nest." *Brit. Birds*, Vol. xxxiii, pp. 95-97.
 [2 & 3] MOREAU, R. E. AND W. M. (1939). "Observations on Swallows and House-Martins at the Nest." *Brit. Birds*, Vol. xxxiii, pp. 146-151.
 [3] WILLIAMSON, K. (1941). "First brood of Swallow assisting to feed second brood." *Brit. Birds*, Vol. xxxiv, p. 221.

BIRDS OF INNER LONDON

BY

G. CARMICHAEL LOW AND M. S. VAN OOSTVEEN.

DURING the year under review (1945), there has been one new record for Inner London, viz., the White-fronted Goose (*Anser albifrons*), a flock of this species having been seen by Mrs. Rait Kerr crossing over Lords on February 17th. Mr. Holte Macpherson tells us that this brings the list for Inner London up to 146 now. There is also a second record for the century of a Little Gull in London. Black Redstarts were not so much in evidence as in previous years.

ADDITIONAL NOTES IN 1945.

GOLDFINCH (*Carduelis c. britannica*).—Sir Philip Manson-Bahr saw a pair with three young ones in Queen Mary's Rose Garden, Regents Park, on June 17th. Sir Cyril Hurcomb reports a small flock in the Green Park in August.

BRAMBLING (*Fringilla montifringilla*).—Mr. Preston Donaldson saw one in Kensington Gardens, December 9th.

GREY WAGTAIL (*Motacilla c. cinerea*).—Howard Bentham saw one in Temple, October 4th and 8th; two in same area, October 12th. Mr. C. L. Collenette saw one near Park Lane, October 23rd. Not so many as in 1944.

TREE-CREEPER (*Certhia familiaris britannica*).—Several seen in Kensington Gardens during year. Sir Cyril Hurcomb saw a family of five or perhaps six there on September 2nd.

SPOTTED FLYCATCHER (*Muscicapa s. striata*).—Two pairs nested Kensington Gardens (G.C.L.). Adult with three young, Lincoln's Inn Fields, July 18th (Howard Bentham). A pair nested Temple Gardens (E. Mann).

GOLDCREST (*Regulus r. anglorum*).—Seen in Kensington Gardens, March 11th and 25th (G.C.L., R. Preston Donaldson).

CHIFFCHAFF (*Phylloscopus c. collybita*).—Two seen and satisfactorily identified by Howard Bentham in Nevills Court, Fetter Lane, September 11th.

WILLOW-WARBLER (*Phylloscopus t. trochilus*).—Several records.

SEDGE-WARBLER (*Acrocephalus schænobiaenus*).—One Pump Court, Temple, August 20th (Howard Bentham).

GARDEN-WARBLER (*Sylvia borin*).—Mr. F. J. Holroyd and Howard Bentham saw a pair in Nevills Court, Fetter Lane, September 11th.

WHITETHROAT (*Sylvia c. communis*).—One, Temple Church, May 7th (E. Mann). Two seen near Temple Church, August 20th (Howard Bentham).

FIELDFARE (*Turdus pilaris*).—About a dozen near Hyde Park Corner, January 19th (Sir Cyril Hurcomb).

WHEATEAR (*Oenanthe o. oenanthe*).—One flew across the Round Pond, Kensington Gardens, May 8th (R. Preston Donaldson, G.C.L.). A pair on blitzed area, Cripplegate, September 13th (A. G. Hancock).

WHINCHAT (*Saxicola rubetra*).—One, September 10th, near Temple Hall (Howard Bentham).

REDBSTART (*Phoenicurus ph. phoenicurus*).—Mr. Howard Bentham saw one on August 21st near Temple Hall.

BLACK REDSTART (*Phoenicurus ochrurus gibraltariensis*). Less in evidence this year. For full details *vide* Fitter, "Report on the Black Redstart Inquiry, 1945" (in press).

GREEN WOODPECKER (*Picus viridis pluvius*).—One, Kensington Gardens, January 19th (R. W. Hayman, G.C.L.) ; another, October 16th and 30th (B. A. Richards) ; one, Green Park, November 15th (W. G. Teagle).

GREAT SPOTTED WOODPECKER (*Dryobates major anglicus*).—Seen frequently Kensington Gardens throughout the year (B. A. Richards).

LESSER SPOTTED WOODPECKER (*Dryobates minor comminutus*).—Mr. J. Bailey saw five on the canal bank at the Zoo on February 28th. One, Kensington Gardens, March 28th (L. Mills).

CUCKOO (*Cuculus c. canorus*).—One in garden in Tregunter Road, May 9th (Miss Balston) ; one, Kensington Gardens, May 20th (R. Preston Donaldson).

KESTREL (*Falco t. tinnunculus*).—Many records by different observers throughout the year.

SPARROW-HAWK (*Accipiter n. nisus*).—Seen several times by Mr. B. A. Richards from October 16th onwards over Paddington district and the head of the Long Water ; also by G.C.L., November 5th ; St. James's Park, November 6th (E. M. Nicholson) ; Palace Gardens, December 27th (Sir Cyril Hurcomb).

WHITE-FRONTED GOOSE (*Anser albifrons*).—Mrs. Rait Kerr reports that 15 geese of this species crossed over Lords Cricket Ground, 10.50 a.m. (B.S.T.) on February 7th going N.E. ; five broke away and came round quite low over Elm Tree Road. Reported in *The Times*, February 12th. First record for Inner London.

SCAUP (*Aythya marila*).—A pair frequented the Round Pond from February 4th to March 27th (G.C.L., R. Preston Donaldson, B. A. Richards) ; another female, apparently paired with a Tufted drake, April 25th, and another, December 12th (G.C.L.) ; the usual St. James's Park drake came back December 16th (C. J. Purnell) and was there December 28th (G.C.L.).

SHAG (*Phalacrocorax a. aristotelis*).—A young bird took up its quarters on the boat shed at the Serpentine on September 28th ; it was found dead on October 11th by Mr. Teagle, who brought it to the Natural History Museum, where it was identified and kept for the collection (Miss Enid MacEwen, L. Mills).

GREAT CRESTED GREBE (*Podiceps c. cristatus*).—Two, Serpentine, February 1st (Sir Cyril Hurcomb) ; a pair on Round Pond in March for 48 hours only (Major W. M. Beckwith) ; one, Round Pond, April 22nd (A. Graham Brown) ; one young bird, Round Pond,

August 29th, and another (a different bird), Long Water, September 3rd. Both stayed for a considerable time (B. A. Richards, G.C.L.).

LITTLE GREBE (*Podiceps r. ruficollis*).—One, Round Pond, August 29th; three, Lake, St. James's Park, September 24th (G.C.L.).

CURLEW (*Numenius a. arquata*).—Mrs. Rait Kerr saw a small flock fly across Lords Cricket Ground, going S.E., at 6.50 a.m. on November 4th.

JACK SNIPE (*Lymnocryptes minimus*).—One found in Islington was taken to the Zoo on November 2nd; it showed no sign of injury and was in perfect plumage (G. M. Vevers).

COMMON SANDPIPER (*Actitis hypoleucus*).—One on Thames between Albert and Chelsea Bridges, August 8th and 9th (E. M. Nicholson).

LITTLE GULL (*Larus minutus*).—Mr. R. H. Ryall saw an adult of this species between Westminster and Hungerford bridges on October 1st. Mr. Holte Macpherson informs us that this is the second Inner London record for this century. One was recorded from Regents Park, January 17th, 1936. Harting saw one in the previous century, February 15th, 1895, over the Thames at Charing Cross when the river was blocked with ice (*Zoologist*, 1895, p. 110).

MOORHEN (*Gallinula ch. chloropus*).—About ten on the Thames, south side, between Hungerford and Waterloo bridges, January 27th (F. J. Holroyde).

REPORT OF THE BIRD-RINGING COMMITTEE*:

PROGRESS FOR 1945.

A. LANDSBOROUGH THOMSON, C.B., D.S.C.

Chairman of the Committee.

THIS is the ninth report† issued on behalf of the Bird-Ringing Committee of the British Trust for Ornithology, continuing the earlier sequence by H. F. Witherby published under the title "The *British Birds* Marking Scheme."

MANAGEMENT.

The headquarters of the scheme remain in the British Museum (Natural History), by permission of the Trustees, and rings are inscribed "BRITISH MUSEUM NAT. HIST. LONDON."

The Committee has been reconstituted by the Council of the Trust with the following members :—Dr. A. Landsborough Thomson (Chairman), A. W. Boyd, P. A. D. Hollom, the Earl of Ilchester (representing the Trustees of the British Museum), David Lack, George Waterston and Miss E. P. Leach (Hon. Secretary).

Miss Leach has continued to perform single-handed the whole of the arduous headquarters duties of the scheme, and has been active in arrangements for the resumption of ringing on a larger scale as soon as conditions permit. The Committee wish once more to record their most cordial thanks.

FINANCE.

The financial position has remained satisfactory during the period under review, but the future is uncertain owing to the fact that rings will cost much more to make than before the war. The Committee will endeavour to find means of avoiding any great increase in the price to ringers.

PROGRESS OF RINGING.

The situation as regards the supply of new rings has caused considerable anxiety, but the prospects of its becoming satisfactory within a few months are now reasonably good. Meanwhile, economy in the use of rings is still essential. (The Hon. Secretary will be grateful if ringers will refrain from asking for rings during the second half of June).

The number of birds ringed (see Tables) shows a small increase as compared with 1944, mainly as a result of trapping. More than twenty new ringers joined the scheme in 1945.

Messrs. Cowin, Crellin, Ladds and Williamson top the list with the largest total (804) of birds ringed. Messrs Ash and Ridley show the largest number (47) of species. Mr. K. Williamson had a fourth and final season of ringing in the Faeroes.

*A publication of the British Trust for Ornithology.

†The previous report was published in *Brit. Birds*, Vol. xxxviii; pp. 290-294.

The Spotted Crake appears in the list of species for the first time, one having been caught on board ship off the west of Ireland by Mr. M. N. Rankin. For the first time in twelve years no Black Redstarts were ringed. The Wryneck reappears in the list after an interval of eight years, 13 having been ringed. Little Ringed Plovers were ringed in Middlesex by members of the London Natural History Society.

RECOVERIES.

Among the recovery records of special interest, that of a Turnstone in Greenland has already been separately published. A Swallow ringed as a nestling in Shropshire in 1943 was recovered in the Orange Free State in March, 1945. A Wood-Pigeon ringed in Northumberland in 1944 was recovered in Co. Tipperary in November, 1945, this being the first record showing movement to Ireland. A Heron ringed as a nestling in Essex was reported from Shropshire two months later.

A Moorhen ringed as an adult near York in November was recovered twenty miles away in January : previous records have not shewn even this amount of movement. A Kestrel ringed as a nestling in Northumberland was found dead in Inverness-shire, also an unusual distance.

Of birds ringed in the Faeroes, there have been several recoveries of Oystercatchers in Northern Ireland, a Kittiwake in Norway, and a Gannet on the west coast of France.

PUBLICATION OF RESULTS.

The following publications have been made under the auspices of the Committee since the last report:—

E. P. Leach (1945). "Recovery of Marked Birds," *Brit. Birds*, Vol. xxxviii, pp. 347-350, 370-372.

E. P. Leach (1945). Note on "Ringed Turnstone recovered in Greenland." *Brit. Birds*, Vol. xxxviii, p. 376.

NUMBER OF BIRDS RINGED.

				<i>Trapped.</i>	<i>Nestlings.</i>	<i>Total</i>
In 1945	..	..	..	1,875	5,419	7,294
„ 1944	..	..	..	1,183	5,313	6,496
„ 1943	..	..	..	660	3,920	4,580
„ 1942	..	..	..	1,301	3,266	4,567
„ 1941	..	..	..	3,109	3,990	7,099
„ 1940	..	..	..	14,974	6,208	21,182
„ 1939	..	..	..	27,983	27,834	55,817
„ 1938	..	..	..	24,162	26,162	50,324
„ 1937	..	..	..	21,900	23,281	45,181
„ 1936	..	..	..	19,235	29,428	48,663
From 1909 to 1935	..	..	..	...	...	482,070
Grand Total (including arrears)				734,007		

INDIVIDUAL TOTALS FOR 1945.

	<i>Nest-Trapped lings.</i>	<i>Total</i>		<i>Nest-Trapped lings.</i>	<i>Total</i>
Cowin, Crellin,			C. F. Tebbutt	3	22
Ladds and			L. G. Weller	22	3
Williamson	84	720	J. Crosthwaite	—	23
R. H. Brown	2	427	H. O. Bunce	—	22
Ash & Ridley	150	272	A. H. Johnson	9	13
London N.H.S.	157	153	F. Dean	1	20
J. Lees	236	66	Marlborough Coll.	20	1
J. J. Boon	12	252	H. M. Rogers	1	20
Skokholm Bird Obs.	90	167	C. Burnham	—	19
Oxford Orn. Soc.	193	22	Culford School	10	9
Wood-Pigeon Inq.	6	207	P. A. Roberts	—	18
Repton School	18	185	M. P. Winser	9	9
Sedbergh School	10	173	Mmes. Anscombe and Read	1	16
Bedford School	44	126	W. A. Cadman	7	10
Bootham School	144	20	Midlothian O.C.	—	17
C. M. Swaine	67	93	E. T. Roberts	1	16
Mrs. Hodgkin	—	157	A. H. Bishop	—	16
A. E. Billett	20	128	D. Hunter	1	15
Storer & Jolley	29	117	J. Simister	—	15
R. F. Ruttledge	—	140	N. Sykes	14	1
A. Watson	20	116	G. Brown	—	14
Cheltenham Coll.	3	119	Christ's Hospital	—	14
A. Darlington	—	117	Sandford, Stephen and Pollok-		
Miss Levy	11	102	Morris	—	13
J. Buxton	27	57	J. C. Walker	4	9
J. Bartholomew	5	78	F. W. Fox	6	6
"Wippletree"	8	72	R. Martinson	—	12
C. Oakes	—	79	Sir S. Bilsland	—	11
G. Hughes-Onslow	—	78	N. F. Brueton	—	11
Edwards, Crapnell and Watson	—	76	A. K. Weatherhead	—	9
D. R. Anderson	51	24	Dauntsey's School	8	—
J. V. Morley	20	49	H. Davies	—	8
Bryanston Sch.	49	16	H. Leith	—	8
Oundle School	—	62	G. L. Potts	1	7
K. R. Chandler	3	57	S. G. Batts	—	7
E. Cohen	16	44	M. K. Hamilton	3	3
J. Cunningham	59	—	W. Murray	—	6
B. Campbell	11	43	R. Poulding	2	4
Lord Dumfries	50	3	M. Pyle	3	3
A. J. Harthan	40	11	A. Buxton	—	5
F. J. Brown	3	44	B. Counsell	—	5
R. Elmes	8	39	C. B. Wainwright	5	—
E. G. Holt	13	33	J. Fraser	3	1
A. W. Boyd	5	40	F. E. Keep	1	3
G. Beven	—	40	E. D. Knight	—	4
G. F. Dixon	5	33	R. B. Cook	1	2
L. A. Cowcill	9	23	M. Hardy	—	3
P. Morshead	18	13	L. P. Samuels	3	—
T. O. James	—	29	O. Wynne	1	2
Clayesmore Sch.	28	—			3

R. M. Band, M. N. Rankin, T. H. Bell, O. Edwards, R. M. Garnett, J. P. Kyd, S. Sporne, Merseyside N.A. and Rugby School ringed one or two birds each.

Small totals for previous years were sent in by Miss Goodwin, P. A. D. Hollom, Miss Medcalf and Shrewsbury School.

NUMBERS OF EACH SPECIES RINGED

RECOVERED

		1909 to 1944	Trapped	1945 Nest lings	Total	Grand Total	of those ringed 1909-44	Per- centage
Raven ...	...	247	3	7	10	257	19	7.7
Crow, Carrion ...	...	1776	4	15	19	1795	82	4.6
Rook ...	...	5050	10	26	36	5086	257	5.1
Jackdaw ...	...	4087	27	24	51	4138	201	4.9
Magpie ...	...	1262	7	39	46	1308	50	4.0
Jay ...	...	565	4	17	21	586	39	6.9
Chough ...	...	54	—	—	—	54	3	5.6
Starling ...	...	70015	174	30	204	70219	3182	4.5
Greenfinch ...	...	30678	70	221	291	30969	2459	8.0
Goldfinch ...	...	592	2	25	27	619	8	1.4
Redpoll, Lesser ...	...	609	—	11	11	620	6	1.0
Linnet ...	...	10521	2	127	129	10650	72	0.7
Bullfinch ...	...	1652	1	61	62	1714	60	3.6
Chaffinch ...	...	33806	264	9	273	34079	1488	4.4
Brambling ...	...	1011	15	—	15	1026	41	4.1
Sparrow, Tree- ...	...	2558	4	9	13	2571	88	3.4
Bunting, Yellow ...	...	5984	14	123	137	6121	412	6.9
Bunting, Reed- ...	...	2028	2	45	47	2075	95	4.7
Lark, Sky- ...	...	3716	13	14	27	3743	47	1.3
Pipit, Tree- ...	...	1908	3	33	36	1944	5	0.3
Pipit, Meadow- ...	...	5636	2	42	44	5680	117	2.1
Pipit, Rock- ...	...	686	—	—	—	686	30	4.4
Wagtail, Yellow ...	...	1124	—	27	27	1151	4	0.4
Wagtail, Grey ...	...	923	—	15	15	938	2	0.2
Wagtail, Pied ...	...	6953	4	50	54	7007	95	1.4
Wagtail, White ...	...	79	—	—	—	79	—	—
Flycatcher, Sptd. ...	...	3530	11	52	63	3593	14	0.4
Flycatcher, Pied ...	...	1571	—	21	21	1592	9	0.6
Chiffchaff ...	...	1008	10	10	20	1028	6	0.6
Warbler, Willow- ...	...	10567	49	39	88	10655	52	0.5
Warbler, Wood- ...	...	1086	3	13	16	1102	2	0.2
Warbler, Sedge- ...	...	1387	—	15	15	1402	7	0.5
Warbler, Garden- ...	...	1351	2	5	7	1358	5	0.4
Blackcap ...	...	991	2	2	4	995	2	0.2
Whitethroat ...	...	4938	56	3	59	4997	35	0.7
Thrush, Mistle- ...	...	5000	16	79	95	5095	116	2.3
Thrush, Song- ...	...	69497	121	392	513	70010	1420	2.0
Redwing ...	...	964	—	—	—	964	7	0.7
Ouzel, Ring- ...	...	566	—	19	19	585	6	1.1
Blackbird ...	...	61324	298	20	318	61642	2983	4.9
Wheatear ...	...	1947	4	47	51	1998	39	2.0
Whinchat ...	...	1762	—	11	11	1773	12	0.7
Stonechat ...	...	1009	—	22	22	1031	7	0.7
Redstart ...	...	2309	1	47	48	2357	16	0.7
Robin ...	...	23534	54	19	73	23607	2290	9.7
Sparrow, Hedge- ...	...	15314	3	2	5	15319	1422	9.3
Wren ...	...	3810	10	—	10	3820	25	0.7
Dipper ...	...	1692	11	74	85	1777	20	1.2
Swallow ...	...	46432	31	807	838	47270	425	0.9
Martin, House- ...	...	12589	53	160	213	12802	81	0.6
Martin, Sand- ...	...	4747	55	80	135	4882	12	0.3
Swift ...	...	1077	17	16	33	1110	63	5.8
Kingfisher ...	...	755	—	—	—	755	33	4.4
Cuckoo ...	...	786	2	27	29	815	22	2.8

NUMBERS OF EACH SPECIES RINGED

RECOVERED

	1909 to 1944	Trapped	1945 Nest- lings	Total	Grand Total	of those ringed 1909-44	Per- centage
Owl, Little ...	... 702	9	41	50	752	61	8.7
Owl, Long-eared ...	... 243	—	8	8	251	8	3.3
Owl, Barn- ...	... 675	—	22	22	697	69	10.2
Owl, Tawny ...	... 1139	3	24	27	1166	68	6.0
Falcon, Peregrine ...	96	—	3	3	99	10	10.4
Merlin ...	... 272	—	21	21	293	52	19.1
Kestrel ...	... 1044	2	26	28	1072	108	10.3
Buzzard ...	... 409	1	15	16	425	16	3.9
Hawk, Sparrow- ...	... 687	2	36	38	725	97	14.1
Heron, Common ...	... 2245	—	33	33	2278	284	12.7
Duck, Sheld- ...	... 475	—	—	—	475	22	4.6
Mallard ...	... 6993	3	1	4	6997	1121	16.0
Teal ...	... 3330	—	2	2	3332	429	12.9
Wigeon ...	... 428	—	1	1	429	67	15.7
Duck, Tufted ...	... 242	22	1	23	265	53	21.9
Goosander ...	... 52	—	—	—	52	10	19.2
Cormorant ...	... 2457	—	5	5	2462	526	21.4
Shag ...	... 1967	—	—	—	1967	199	10.1
Gannet ...	... 10328	67	182	249	10577	360	3.5
Petrel, Storm- ...	... 578	1	—	1	579	41	7.1
Shearwater, Mx. ...	... 20026	68	11	79	20105	1014	5.1
Petrel, Fulmar ...	... 455	2	14	16	471	1	0.2
Pigeon, Wood- ...	... 3232	7	472	479	3711	135	4.2
Dove, Stock- ...	... 780	10	42	52	832	63	8.1
Dove, Turtle- ...	... 711	—	12	12	723	75	10.5
Curlew, Stone- ...	... 256	—	4	4	260	10	3.9
Oyster-catcher ...	... 1791	—	101	101	1892	77	4.3
Plover, Ringed ...	... 1565	—	12	12	1577	20	1.3
Plover, Golden ...	... 361	—	17	17	378	9	2.5
Lapwing ...	... 41075	6	470	476	41551	881	2.1
Dunlin ...	... 125	—	4	4	129	1	0.8
Sandpiper, C. ...	... 927	1	17	18	945	3	0.3
Redshank ...	... 2454	1	26	27	2481	81	3.3
Curlew, Common ...	... 3249	1	57	58	3307	132	4.1
Snipe, Common ...	... 1768	—	15	15	1783	87	4.9
Woodcock ...	... 5396	—	10	10	5406	413	7.7
Tern, Sandwich ...	... 18062	—	93	93	18155	321	1.8
Tern, Roseate ...	... 400	—	44	44	444	1	0.3
Tern, Common ...	... 19698	—	65	65	19763	471	2.4
Tern, Arctic ...	... 3108	—	16	16	3124	14	0.5
Tern, Little ...	... 824	—	27	27	851	8	1.0
Gull, B-headed ...	... 14288	43	—	43	14331	687	4.8
Gull, Common ...	... 2074	29	166	195	2269	75	3.6
Gull, Herring- ...	... 8719	19	23	42	8761	244	2.8
Gull, L. Bl.-bkd. ...	... 10827	3	26	29	10856	418	3.9
Gull, G. Bl.-bkd. ...	... 636	—	5	5	641	26	4.1
Kittiwake ...	... 2028	—	92	92	2120	29	1.4
Skua, Great ...	... 528	—	1	1	529	18	3.4
Razorbill ...	... 4566	2	15	17	4583	97	2.1
Guillemot ...	... 2471	6	10	16	2487	53	2.1
Puffin ...	... 5444	4	2	6	5450	90	1.7
Crake, Corn- ...	... 559	1	6	7	566	9	1.6
Moorhen ...	... 1771	84	2	86	1857	54	3.0

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

V. THE THREE-TOED WOODPECKER.

Photographed by H. N. SOUTHERN.

(Plates 21-22).

THE Three-toed Woodpecker (*Picoides tridactylus*) is one of the birds of Western Europe of which there is no good evidence that it has occurred in the British Isles, though Donovan's *History of British Birds* (1794-1819), in which it is figured in plate 143, contains the statement that "a solitary individual of this kind was lately shot in the north of Scotland," an assertion too vague to be of any value.

The Three-toed Woodpecker is typically a bird of conifer forests, though in northern Europe it extends to some extent into the birch region and in winter visits deciduous woods. It has a discontinuous distribution in Europe, the typical race, *P. t. tridactylus*, here figured, occurring in the northern forest belt of Scandinavia, Finland and North Russia (from which its range extends eastwards across the whole width of southern Siberia), while another race, *P. t. alpinus*, is found in the Central European mountain ranges. Other races are found in Northern Asia and North America.

This species is slightly smaller than the Great Spotted Woodpecker. The male has a yellow crown, while that of the female is whitish. The black and white pattern is much less clear-cut than in, for example, the Great Spotted Woodpecker, giving the plumage a rather untidy and somewhat dishevelled appearance, especially about the head, which is well brought out in the photographs. The mainly black wings, lacking the conspicuous white shoulder-patches of the Great Spotted Woodpecker, produce a notably dark effect when the bird flies, but the centre of the back is whitish.

The habits are much the same as those of the Spotted Woodpeckers. Both sexes drum and the drumming is said to be often in very slow time. The only note I have heard is a "choök" much like that of the Great Spotted Woodpecker.

Mr. Southern's photographs were taken in Swedish Lapland in 1937. B.W.T.



THREE-TOED WOODPECKER (*Picoides t. tridactylus*).

MALE AT NEST, LAPLAND, 1937.

(Photographed by H. N. Southern).



THREE-TOED WOODPECKER (*Picoides t. tridactylus*).

FEMALE AT NEST, LAPLAND, 1937.

(Photographed by H. N. Southern).

NOTES.

CORN-BUNTINGS IN SCILLY.

WITH reference to Lt.-Col. B. H. Ryves's statement (*antea*, p. 43) that all species of buntings are absent in the Scillies, it may be of interest to record that my husband and I saw and heard several Corn-Buntings (*Emberiza calandra*) in song on St. Agnes, on July 26th, 1930.

SYLVIA LLOYD.

MARSH-TITS IN BERWICKSHIRE.

WITH reference to the note by Mr. George Edwards on Marsh-Tits (*Parus palustris dresseri*) breeding in Berwickshire (*antea*, Vol. xxxviii, p. 316), I have known Marsh-Tits for the last twenty years (no observations made prior to that time) on the Hirsel Estate, near Coldstream, Berwickshire. The estate is well wooded and includes a 3-4 mile stretch of the river Leet where high banks of old hard-woods (chiefly beech) attract several pairs annually ; while one or two pairs are to be found in several of the woods on the estate. I have examined a number of nests of the species.

The Willow-Tit (*P. atricapillus kleinschmidti*), on the other hand, is very local and I have found it in only two of the woods, in marshy surroundings among broken willows and spruces. Small parties of Marsh-Tits can be seen in the company of other tits during the winter months.

I have made no observations outside the estate, but similar wooded country stretches to the north and I think it is improbable that Marsh-Tits are confined entirely to the small area with which I am familiar.

H. DOUGLAS-HOME.

WAXWINGS IN INVERNESS-SHIRE, SUTHERLAND,
ABERDEENSHIRE, CUMBERLAND AND YORKSHIRE.
ON November 23rd, 1945, I saw a single adult Waxwing (*Bombycilla g. garrulus*), probably a male, at Loch Insh, Inverness-shire.

RICHARD PERRY.

On November 25th, 1945, a Waxwing (*Bombycilla g. garrulus*) was picked up dead by Mr. Donald Murray under telephone wires on the Tongue-Thurso road at Coldbackie, about two miles east of the House of Tongue.

JAMES W. CAMPBELL.

ON FEBRUARY 9th, 1946, I saw a single Waxwing (*Bombycilla g. garrulus*) close to Turriff, Aberdeenshire, and on February 15th one was seen at Laithers House, Turriff. On February 25th, during a severe wintry spell, I saw five together actually in the town of Turriff, and on March 1st there was one at the town refuse dump and another trilling loudly in a neighbouring garden.

ADAM WATSON.

On November 25th, 1945, I had a close view of a single Waxwing (*Bombycilla g. garrulus*) at Hale Hall, an upland district about four miles south-east of Egremont, Cumberland. This occurrence has already been reported in *The Field*, Dec. 22, 1945, p. 662.

ST. JOHN R. B. WALSH.

ON January 12th, 1946, I renewed acquaintance with the Waxwing (*Bombycilla g. garrulus*) at Catterick, where large numbers were seen in 1943-4. On this occasion one pair of birds was present and they were later joined by a single one. The birds kept about a belt of hawthorns, feeding on the berries, and I saw one instance of feeding by the (presumed) male.

ALFRED H. BETTS.

A SINGLE Waxwing (*Bombycilla g. garrulus*) was reported in the Pannett Park, Whitby, in the second week of January, 1946, and was seen there by the recorder on January 15th. On January 21st, a Waxwing, presumably the same bird, came to feed on haws on bushes near the Grammar School (about 200 yards from the Pannett Park) and it was last seen on February 28th. C. E. A. BURNHAM.

YOUNG WILLOW-WARBLERS RETURNING TO NEST.

THE behaviour of young warblers recorded on p. 26 of the current volume is possibly not so uncommon as supposed.

In 1939, I had a hide at the nest of a pair of Willow-Warblers (*Phylloscopus t. trochilus*), in which seven young were hatched on May 31st. I was able to enter the hide without the birds being aware of it, and on my first spell of watching on June 13th, I found all seven young sitting in the short grass about 6 inches in front of the nest entrance. After a time two of them fluttered up into a small group of blackthorn bushes to a point 6 feet away from, and 2 feet higher than the nest, where they spent several minutes scrambling about and pecking tentatively at leaves and twigs. They then flew down deliberately to join their fellows outside the nest, where the whole group remained all day. At nightfall all seven were asleep in the nest, but at 7.15 a.m. next morning, all had finally left the nest.

J. STATON.

THE following notes on young birds leaving and returning to the nest were made in 1944, at the nest of a Willow-Warbler (*Phylloscopus t. trochilus*), near Linchmere, Sussex.

Two of the six eggs hatched on May 21st. On the afternoon of June 3rd one of the two chicks hopped outside the nest and returned to it almost at once. Later the same afternoon one of them left the nest, flapped its wings, and then returned, and later still one went about a foot from the nest and then went back to it.

Early next morning, June 4th, one of the chicks twice left the nest and returned to it. At 7.50 G.M.T., one chick flew out of the nest and landed about two feet from the entrance, where it sat and cheeped. The other chick then left the nest, but when about nine inches from the entrance it went back again and was followed by the first chick. They were fed in the nest at 7.55, 8.07 and 8.10.

At 8.48 one chick left the nest, but returned almost at once. As it entered the nest the chick still there opened its bill as though expecting to be fed. At 8.49 one of the parents, believed to be the hen, fed one of the chicks and then hopped away through the undergrowth. The chick that had not been fed flew out of the nest towards the old bird and was followed by the other chick.

The two chicks perched together in the undergrowth about four feet from the nest and were fed by the hen. They did not return to the nest during the next forty minutes, and I do not think they did so again.

Unlike the young Sedge-Warblers described by D. R. Anderson, the young Willow-Warblers were not frightened out of the nest, but made the short excursions on their own initiative.

N. C. HICKS.

COURTSHIP FEEDING OF MISTLE-THRUSH.

WITH reference to the note on courtship feeding by the Mistle-Thrush (*Turdus v. viscivorus*) by Mr. A. W. Boyd (*antea*, p. 88) I can record a further instance seen by my sister last spring. A pair nested fifteen yards from the house, and about fifteen feet up in a beech sapling, so that a close view was obtained from the house. During incubation the cock on several occasions fed the hen while on the nest.

This unusual behaviour was, incidentally, matched by the nest-building activities of the pair, as both birds were engaged; one twisted long sprigs of birch around the nest, while the other packed lichen or moss inside this binding.

M. BROOKS-KING.

WITH reference to Mr. A. W. Boyd's observation (*antea*, p. 88), I have observed this on one occasion, namely on May 3rd, 1943. The particulars, expanded from my abbreviated note-book record, are as follows :—

" 8 a.m., hen on nest ; 10 a.m., hen still on nest, so it seems clear that she has laid her first egg and is warming it up as birds often do before clutch completion ; 10.15 a.m., spotted the male with a worm in his beak alight in the pine ; he soon fluttered down to the nest branch, ran along it to the nest and gave the worm to the hen ; he then settled down comfortably a foot from the nest, waiting for the hen to quit ; 10.30 a.m., hen rose from the nest and took wing, and the male at once followed her. Neither of the birds seen again to-day."

B. H. RYVES.

IRIS AND BILL COLORATION OF HEDGE-SPARROW.

WITHERBY (*Handbook of British Birds*, Vol. ii, p. 212) gives under the heading "Soft parts" the bill coloration of the British Hedge-Sparrow (*Prunella modularis occidentalis*) as black-brown, base of lower mandible pinkish-brown. This is only partially true. After careful examination of a considerable number of specimens in the flesh it became evident that Witherby's description could only satisfactorily apply to juvenile and first winter birds ; adults having entirely black-brown bills without the least vestige of lighter colouring at the base of the lower mandible.

In juvenile and first-winter birds the irides are a warm hazel-brown ; in the adult breeding bird a light reddish-brown.

These notes apply to the three British races, viz., *P. m. occidentalis*, *P. m. hebridum* and *P. m. modularis*, all of which I have examined in the flesh and in extensive series.

P. A. CLANCEY.

BARN-OWLS ROOSTING IN CONIFERS.

MR. D. R. Anderson's record of a Barn-Owl (*Tyto a. alba*) roosting in a conifer (*antea*, p. 90) is not, in my experience, altogether unusual. I can recall having noticed several of these birds in similar positions during the last few years in woods near Blagdon, Northumberland. One pair I have regularly observed in the same Scotch fir in a coniferous plantation during the last two years; another plantation always contains a pair of roosting Barn-Owls, one of which is to be found near the top of a 20 feet high spruce tree, the other about 50 yards away on the lowest branch of a young Scotch fir. I could quote other similar examples. JOHN ASH.

WITH reference to Mr. D. R. Anderson's note under the above heading, may I mention that the occasional habit of these birds of roosting in fir-trees (of several kinds) is one which I have recognized for a number of years and is referred to in *A History of Sussex Birds*, Vol. ii, p. 230.

J. WALPOLE-BOND.

AGGRESSIVE BEHAVIOUR OF PEREGRINE.

JUST before the war I was in a garden near the Dorset coast and heard a loud screaming of hawks just over the brow of a grass field about a hundred yards away. I hurried to see what was happening, but a Fox Terrier and a Golden Labrador joined in the excitement and made better pace than I could up the hill.

When I came to the brow of the hill I saw an extraordinary sight. Two Peregrines (*Falco p. peregrinus*) had been fighting on the ground, and had reached such a state of exhaustion that they were barely able to fly. One flapped off along the ground pursued by the Labrador and reached safety in the hedge of a wood. The other, a falcon, stood her ground, grabbed the terrier by the nose and pinned him to the ground. The terrier was a strong dog, rather given to fighting and afraid of nothing. However, the falcon's attack completely baffled him and he remained motionless, clapped to the ground like a hare in its form, trying to look at me out of the tail of his eye for help or advice.

I knelt down, opened the Peregrine's grip and tucked the dog under my arm, as I wanted neither of them to hurt the other. The falcon with crown feathers erected and wings half expanded was a magnificent sight and I watched her at my feet for several minutes until she recovered her breath sufficiently to flutter along the grass, and gradually gaining height, made off for the cliff nearby.

Sham fights between Peregrines and Ravens are of almost daily occurrence here in the summer, but I have never before seen

Peregrines fighting on the ground or with such ferocity, nor should I have expected one to tackle a dog three or four times her weight with such promptitude and success.

RALPH BOND.

KESTREL FOLLOWING PLOUGH.

MR. J. STATION recorded (*Brit. Birds*, Vol. xxxvi, p. 245) an instance of a Kestrel (*Falco t. tinnunculus*) which was observed following the plough in October, 1942.

On December 11th, 1945, a ploughman at Frandley, near Gt. Budworth, Cheshire, told me that he had been accompanied all day by a brown bird. It was a foggy day and although the dense mist did not allow the exact nature of its food to be seen, I was able to watch the bird at very close quarters. I found it was a Kestrel and watched it repeatedly fly from a wooden fence surrounding the field to the newly-turned furrows and pick up food of some kind. There was no evidence of field-mice or their nests in the field, as in the instance recorded by Mr. Staton, and so far as I could see the Kestrel was picking up earth-worms and perhaps leather-jackets and other insects.

A. W. BOYD.

Mr. A. W. Boyd's observation of a Kestrel (*Falco t. tinnunculus*) following the plough prompts me to record related, though not identical behaviour on the part of a pair of Kestrels in the Gatley district, Cheshire. During the exceptionally cold weather of January, 1940, when 30 degrees of frost were registered locally, the district council was engaged in re-laying the sewer across some fields near my house. A large and powerful mechanical digger was employed, and this turned up the earth to a depth of several feet, well below the frost level. In doing so, a large number of worms and similar creatures were laid bare, and the wake of the digger became a foraging area for many of the half-starved birds of the district. Thrushes, Blackbirds, Redwings, and even a party of seven Stonechats, appeared, but most surprising of all, a pair of Kestrels regularly walked among the smaller birds, picking up worms and centipedes. They made no attempt to interfere with the other birds, but looked thoroughly incongruous. They were quite tame.

STUART SMITH.

MARSH-HARRIER PREYING ON GREEN WOODPECKER AND WATER-RAIL.

A MARSH-HARRIER (*Circus æ. æruginosus*), a completely brown bird without a creamy-yellow cap, has frequented a Kentish marsh for the past six months, and on January 26th, 1946, I flushed the bird off the partially eaten and still warm body of a Green Woodpecker (*Picus viridis virescens*).

Water-Rails (*Rallus a. aquaticus*) are common on the marsh in question and I have twice seen this particular Marsh-Harrier rise

from the fresh remains of these birds. I believe them to be a regular prey of this species.

T. C. GREGORY.

[The Rev. F. C. R. Jourdain in *The Handbook* (Vol. ii, p. 58) mentions one record of a Water-Rail as prey of the Marsh-Harrier.—EDS.]

GLOSSY IBIS AND PINK-FOOTED GEESE IN CO. WEXFORD.

ON January 8th, 1946, we saw at close range two Glossy Ibis (*Plegadis f. falcinellus*) on the North Slob, Co. Wexford, and we have since been informed that they had been present since about November 1st, 1945. On the same day we observed two Pink-footed Geese (*Anser fabalis brachyrhynchus*), which we judged to be immature birds, on the North Slob.

JOHN BARLEE AND ROBERT F. RUTLEDGE.

[For a recent note on Pink-footed Goose in Co. Wicklow by Mr. G. R. Humphreys, see Vol. xxxviii, p. 276.—EDS.]

COITION OF MUTE SWAN ON LAND.

On April 22nd, 1945, at Waterbeach (Cambs.) Experimental Breeding Waters, a pair of Mute Swans (*Cygnus olor*) were noted to have a nest containing four eggs. When completing my tour of the pits, I heard a loud flapping and peering through an opening in the hedge, adjoining the pits, I saw the pen approaching, with wings out-stretched, the cob in close pursuit. The pen reached a small promontory, on to which it clambered, the cob following. The pen prostrated, uttering a continuous loud asthmatic gasping noise. The cob mounted, grasping the pen below the head with his beak, but the pen did not respond : thereupon the cob kept biting at the neck, pulling out mouthfuls of feathers, following this by stamping on her back, and pulling at the mantle feathers. Coition then took place, both birds then returning to the water.

ALEX. S. THOM.

DISPLAY OF MUTE SWAN.

I HAVE twice watched on Cheshire meres a display by Mute Swans (*Cygnus olor*) which does not seem to have been fully recorded.

The first occasion was on February 18th, 1943. Of some ten birds which were indulging in much flying about and splashing two pairs were displaying separately : the cob and pen faced one another and alternately "bobbed" to another somewhat after the fashion of the Great Crested Grebe.

Again on December 31st, 1945, on another mere, a pair swam close side by side and repeatedly bowed alternately to one another and as they faced one another twisted their necks in a peculiar way, and, so far as I could see through my telescope, appeared to caress one another. The female then flattened herself in the water and became submerged except for head and neck ; coition took place as recorded in the "Display and Posturing" paragraph

in *The Handbook*. It was apparently an unusually early case of pairing, for the birds then pushed their way laboriously through thin ice which covered that part of the mere. A. W. BOYD.

FERRUGINOUS DUCK IN NORTHAMPTONSHIRE.

ON December 13th, 1945, a male Ferruginous Duck (*Nyroca n. nyroca*) was observed in company with nine Pochard on the gravel-pit ponds just outside Oundle to the south-west. The bird was very slightly smaller than a male Pochard, with a darker chestnut-coloured head. The back was the same colour, with a few feathers tipped with grey on the fore-part of the back. The flanks were slightly lighter than the head and the breast lighter still and somewhat pink. The upper tail-coverts were nearly black and the under tail-coverts a brilliant white and very prominent. Sometimes a small white speculum showed, but this was not always noticeable. The bird had a white belly, visible when flying and when it flapped its wings. The iris was pure white and the beak appeared a little thinner than that of the male Pochard, and grey-brown in colour, growing lighter towards the tip.

The bird was seen on each day from December 13th-16th. On one occasion I got within 10 yards of it and on two other occasions within 30 yards, so that close observation was obtained in excellent light.

The bird dived frequently, averaging 14 secs. under water. During the period of its stay at Oundle it was watched by four or five other observers. It was not seen on December 17th, nor on any succeeding days.

R. J. F. TAYLOR.

[Although there is a good *prima facie* probability that Ferruginous Ducks seen in East Anglia may be genuinely wild, in view of the large number of previous records from that area, records from almost anywhere else are inevitably somewhat suspect, as the species is one of those not uncommonly kept in captivity.—EDS.]

SURF SCOTER IN NORTHUMBERLAND.

ON December 8th, 1945, I had an unmistakable view of a male Surf Scoter (*Melanitta perspicillata*) on the Northumberland coast, at Cheswick. Quite a large flock of Common Scoters (*Melanitta n. nigra*) had been resident here, just offshore, since early October. At high tide they often came into a small cove overlooked by a ridge of rocks from which they could be closely observed.

On the date in question I found two immature Velvet Scoters (*Melanitta f. fusca*) with the others, and then another bird surfaced about 25 yards away, with its back to me. It was jet black with a large squarish white patch on the back of the neck. When it turned round another white patch on the crown and its heavy orange and white bill at once proclaimed its identity. After a few minutes it flew out to sea, passing over a more distant party of scoters, from which two other birds immediately rose and joined it. These seemed to be mainly dark brown in colour and, being much bulkier than the common species, may have been females. On December 11th I again saw the drake about 50 yards offshore, but there

was no sign of it on the 15th, when Mr. H. Tully and I searched the coast for it.

F. BRADY.

EASTERN TURTLE-DOVE IN NORFOLK.

ON January 29th, 1946, during a pheasant shoot at Castle Rising, a turtle-dove was flushed from a covert by the beaters and shot by one of the guns. It was sent to the Norwich Castle Museum for identification and proved to be a specimen of the Eastern Turtle-Dove (*Streptopelia o. orientalis*). Distinguishing features were the large size, the dark slate-blue rump, and grey instead of white under tail-coverts, tips of neck patch feathers and ends of tail-feathers. It proved to be a female on dissection and the measurements were as follows :—Wing 190 mm., tail 120 mm., tarsus 27 mm., and bill to feathers, 17 mm.

Unfortunately it was badly damaged by shot and had lost many of the outer coverts of both wings, but it appeared to be completing a moult from juvenile to first winter plumage. The five innermost primaries were new with very narrow whitish margins, while the five outer ones were worn and had broader rufous edges suggesting juvenile feathers. The two central and two outer tail-feathers were new, one of the latter being only half grown. The body moult appeared to have been completed, including the neck patches. A bird such as this must always be under suspicion as an "escape," but a letter to the *Eastern Daily Press* asking for information as to any known to have been kept in aviaries in Norfolk elicited no replies.

I may add that the identity of the bird had been recognized by Mr. E. A. Ellis, of the Norwich Castle Museum, before I saw it.

B. B. RIVIÈRE.

TURNSTONES USING ELEVATED PERCHES.

ON December 3rd, 1944, I saw six Turnstones (*Arenaria i. interpres*) alight together and with no hesitation on one of the horizontal bars of the tubular obstructions which were then in position along the beach at Exmouth. Later I found 20 thus perched several feet above ground level. A strong west wind was blowing, and the birds that were perched on bars at right angles to the wind seemed comfortable enough, but those on the bars that ran west to east had to face the wind by perching *along* the bars, and at times had difficulty in keeping a foothold.

On December 5th, 22 were perched near the same place. It was a quiet day, yet all were perched *along* the highest horizontal bar.

On October 2nd, 1945, a few were perching on similar obstructions which still remained at Dawlish Warren. On each of the above occasions the tide was about high.

R. G. ADAMS.

[For previous notes and comments on this subject, see *antea*, pp. 30, 157.—EDS.]

FOOD-WASHING HABIT OF CURLEW-SANDPIPER.

ON August 20th, 1943, I was watching at close range four Curlew Sandpipers (*Calidris testacea*) which were feeding on the mud flats near Hallum, prov. Friesland, Holland.

The birds were probing the dry mud at the edge of a little creek. Now I noticed that when one of the birds got a small sand-worm, it at once ran with quick steps to the creek and stepped into the shallow water, where it dipped the worm a few times into the water before swallowing it. Then it ran back to the dry mud, where it started probing once more, immediately running back to the water as soon as it had taken another worm and dipping it in the same way before eating it. It was certainly a kind of washing of the food before it was swallowed. All four birds behaved in exactly the same way. I do not remember having seen this habit before either in this species or in the much more numerous Dunlin (*Calidris alpina*). Nor is it mentioned in the *Handbook of British Birds*, Vol. iv, where on page 234 a full description is given of the Dunlin's feeding habits.

In the literature I can find only one record of a similar incident observed by Evenden (*Condor*, 1943, p. 120), who watched an American Dipper (*Cinclus mexicanus*) feeding its young and who states: "While food was held crosswise in the bill, the head was twisted rapidly from side to side in the water. After washing the food, the bird flew directly to a ledge below the nest."

FR. HAVERSCHMIDT.

[We suspect this habit is more widespread amongst waders than the scanty information on the subject suggests. It is recorded by J. F. Thomas (*antea*, Vol. xxxvi, p. 33) in the Redshank (*Tringa totanus*), and R. N. Winnall and G. K. Yeates (*Bird Haunts in Wild Britain*, p. 86) consider it usual in that species. We should welcome observations on any other waders. We have no other references from the literature, but it is probable that some others exist.—EDS.]

TEMMINCK'S STINTS AND OTHER WADERS IN ANGLESEY.

ON various occasions from September 4th to 8th inclusive, 1945, I had good views of two Temminck's Stints (*Calidris temminckii*) in a muddy, marshy field in S.W. Anglesey. I was first attracted by the greyish colour of the mantle and upper-parts generally and by the colour of the legs, olive-green in one bird and yellowish-olive in the other, which ruled out Little Stint. Later when I was making notes in my sketch-book one of the birds preened and exposed the white outer tail-feathers. The birds were tame and came within three yards of the wall which separated the road from the swampy mud. I was using a pair of x 8 field-glasses and was able to draw the plumage in detail, even to the exquisite pale edges of the wing-coverts. They often took cover in the hoof-marks made by horses and cattle in the mud, and among clumps of grass and stunted reed-mace.

In the same area during the first weeks of September I saw twenty-two Black-tailed Godwits (*Limosa l. limosa*), a small flock of five Ruffs (*Philomachus pugnax*) and a flock of ten Curlew-Sandpipers (*Calidris testacea*).

C. F. TUNNICLIFFE.

BONAPARTE'S SANDPIPER SEEN IN KENT.

ON August 17th, 1945, I was watching birds on the Salts near Sandwich, Kent, when my attention was attracted by a very high-pitched, squeaking call-note. As it was quite a new call to me and quite unlike any I had heard before, I naturally followed the bird to where it was feeding with juvenile Dunlins and Ringed Plovers. It turned out to be much like a Dunlin in winter plumage and as the only Dunlin there were in summer plumage or juveniles it was easy to pick out. I followed it all round the Salts for about half an hour, and each time it flew it uttered the same high-pitched squeak and showed a white rump and dark tail. At first I thought it was a Curlew-Sandpiper except for the call-note, until I got within 15 feet of it where it was resting very close to four juvenile Dunlins. I then noticed that it was about the same size as they, but slimmer in build. The back was ash-grey marked with black, the crown dark ash-grey, and the neck, throat and breast ash-grey prominently speckled with black, the speckles on the breast ending almost in a line. A very small margin on the flank just beneath the wing was likewise speckled. The chin, belly and under tail-coverts were white and there was a white eye-stripe. The bill was black and straight and the legs also black.

When apparently asleep the bird rested on one leg with its bill on its back exactly like the Dunlins; also when alert to danger its carriage was like that of a Dunlin. When at last I approached too close it took wing, squeaking a lot, and I noticed an almost indistinguishable brownish wing-bar widening towards the primaries. I also noticed when it landed that its tail was fanned out, showing a very rounded end. The flight did not differ from a Dunlin's, and after about half-an-hour it was lost among a twisting and turning flock of these birds.

I am quite certain of all the particulars given, as I was so very close to the bird, and they were all scribbled down on a piece of paper when I was not 20 feet away from it. They appear to agree exactly with Bonaparte's Sandpiper (*Calidris fuscicollis*). I was using Zeiss x 8 binoculars, and may add that I am thoroughly familiar with Dunlin and the other ordinary waders.

JOHN VOYSEY.

[This is an instance of a sight record of a very rare bird which can be safely accepted on account of the distinctive combination of Dunlin-like general appearance, white rump and highly peculiar note, and the full and careful description written down by the observer on the spot. B.W.T. has fully discussed the observation with Mr. Voysey in person, and we are satisfied of its reliability—EDS.]

FLOCK OF SPOTTED REDSHANKS IN SUSSEX IN WINTER.

ON January 13th, 1946, I found a flock of what I at first took to be 28 Common Redshanks (*Tringa totanus*) beside the Rother below Rye. They were rather wary and I was unable to get nearer to them

on the mud than about 100 yards ; but this I did on a number of occasions, examining them with a telescope as I followed them down to Rye Harbour and then back nearly to Rye. When they first flew past me I saw that four of them were Common Redshanks, having the white hinder edgings to their wings, but this the other 24 lacked, the feathers being flecked and barred with brown. On the ground these birds were also larger than the other four and had longer bills and it was evident that they were Spotted Redshanks (*T. erythropus*). When feeding these birds uttered a soft "chu-chu" at intervals. The species was a new one to me, as I had only seen my first, a single bird, a week previously. J. ASHBEE.

[Mr. R. Cooke informs us that a party of five Spotted Redshanks spent the winter of 1944-45 on Pett Level. Two of them were shot on January 6th and the others remained till March.—EDS.]

KENTISH PLOVERS IN NORTHAMPTONSHIRE, NORTHUMBERLAND AND ON LEICESTERSHIRE- RUTLAND BORDER.

ON September 19th, 1945, I had an excellent view of two Kentish Plovers (*Leucopolius a. alexandrinus*) at the Northampton Sewage Farm. When I first saw the birds I was struck at once by their somewhat slighter build as compared with Ringed Plovers, with which I am familiar and several of which were also present. The upper-parts were also somewhat lighter. There was a blackish stripe through the eye, white fore-head, and a white stripe continuous above and behind the eye and not interrupted above the eye, as in the Ringed Plover. There was no pectoral band, but a small brownish-black patch on each side of the breast, looking more like a smudge than a definite patch, and much browner in one bird than the other. The legs, bill and feet were greyish-black, and apart from the other distinctive characters mentioned I was able to make quite certain that the legs were really of the colour stated and that the appearance was not due to mud adhering to them ; one of the birds was standing up to its belly in water when I first saw it, and when it moved out on to the mud the legs were perfectly clean. I watched the birds for about five minutes at about 20 yards range with a x 30 telescope. In flight they showed an indistinct white wing-bar, which picked them out from amongst the Ringed Plovers, with their broader and more prominent bars, when they joined up with these birds in flight. On the ground, however, they kept apart. No call was heard. I. J. FERGUSON LEES.

ON September 21st, 1945, on a sandy and rocky shore about two miles south of Berwick I flushed what proved to be a Kentish Plover (*Leucopolius a. alexandrinus*). It flew only a few yards, so I followed it up and made notes and a sketch while it sat in a huddled attitude about ten yards away. I also used x 8 field-glasses.

The following were the main characteristics, as taken down on the spot. Smaller and slimmer than Ringed Plover. Legs very dark and comparatively longer than in Ringed Plover. Light sandy band on sides of upper breast with large area of white between

the two marks of opposite sides. Upper-parts, including head, sandy-brown and noticeably paler than in Ringed Plover. Very dark band from bill to eye and across ear-coverts. Distinct and continuous white superciliary stripe. White nuchal ring without dark border. White wing-bar narrower, but more clearly defined than in Ringed Plover. Noticeable white border to secondary region of wing. Sides of tail broadly white, the white extending to sides of rump.

I put the bird up several times, and each time it flew only a short distance and again adopted the huddled attitude. It made no call.

I am quite familiar with the Ringed Plover and had been watching a flock at close range only a few minutes before meeting this solitary bird. On the 23rd I saw the Ringed Plovers again and spent an hour watching them. Out of about thirty immature birds, all with distinct yellow legs, only two had an interrupted breast-band, and the interruption in these was only slight. None had a continuous superciliary stripe or such a narrow band across the lores. Their colour, especially on the mantle, was darker. When they were put up I could not distinguish any white tips to the secondaries.

F. BRADY.

On November 4th, 1945, and subsequently a Kentish Plover (*Leucopolius a. alexandrinus*) was seen and clearly identified by a number of observers at the Eye Valley Reservoir. It was first observed by Messrs. P. O. Summers and H. R. Colman, masters of Kingswood and Uppingham Schools respectively, in company with several boys of the former school, and it was seen again by the majority of these observers on the 6th. On the 12th, Messrs. G. Felstead and P. Gamble, independently of the other observers, also saw the bird, on the 13th it was seen again by Messrs. R. E. Pochin, A. E. Jolley, J. L. Petcher, and Felstead, and on the 14th by Messrs. A. Bonner, R. Broughton, and E. Duffey. It allowed a reasonably close approach, sometimes within 12 feet, and when disturbed only flew a few yards.

The details, noted in the field, were as follows. Appeared similar to Ringed Plover in build, but noticeably smaller. Bill dark. Eye set in dark oval patch which did not extend to base of bill; white superciliary stripe; fore-head white; crown buffish with no evidence of dark markings; lower ear-coverts rufous; back light olive-buff, feathers light-edged at tips. Thin wing-bar in flight, more noticeable when wings were fully outstretched; inconspicuous horizontal buff streak on closed wing. White throat and under-parts; brown-grey patch on either side of breast, running into shoulders. Legs black, appearing longer than in Ringed Plover, particularly from the tarsal joint, which was very prominent. Outer tail-feathers white, centre ones very dark, running into khaki-buff upper tail-coverts. Thin nuchal collar. It was never heard to utter any note.

The reservoir is half in Leicestershire and half in Rutland. The bird was seen in both counties and constitutes a first record for both.

A. E. JOLLEY.

[The Eye Valley record is exceptionally late, but is fortunately very thoroughly authenticated. After the most thorough examination we are satisfied of the reliability of all three records, though three different occurrences of this rare migrant in one autumn are very noteworthy. The close coincidence of the two September dates may be noted. In the case of Mr. Brady's bird, the distinct white border to the secondary region of the wing is a good confirmatory point ; the existence of this difference from the Ringed Plover is not apparent from any of the standard descriptions and not very obviously so even in made-up skins, but is quite noticeable in a spread wing.—EDS.]

BLACK-WINGED STILTS IN CAMBRIDGESHIRE AND LANCASHIRE.

AN occurrence of Black-winged Stilts (*Himantopus h. himantopus*) during the 1945 immigration which was not recorded at the time took place at the Cambridge Sewage-Farm on May 25th, 1945. Two birds were seen here by R. J. R. and B. K. Montgomery. One bird showed some brown on the head, especially near the eye and was presumably not fully mature.

The birds were also seen on the afternoon of the same day by Fl./Lt. R. G. Mayall and P. S. Burns, who had excellent views and noted that one was very dark and the other brown on the back. Both had red or very deep pink legs. They were also observed by A.S.McL. the same evening, but it was by then too dark to obtain proper descriptive details.

A. S. McLEAN AND R. J. RAINES.

ON November 10th, 1945, Mr. L. L. Turner watched for some time a Black-winged Stilt (*Himantopus h. himantopus*) on a sewage-bed on the outskirts of Manchester. He kindly told me of this and on the following days I was able to watch it closely. It was an immature bird with dusky mouse-grey head to below the eye, nape and sides of breast and a narrow dusky band which appeared to meet across the throat ; back and wings darker ; a white tip to some of the secondaries was apparent when it was at rest ; the white of its fore-head was quite narrow. When feeding it walked quickly and I saw it sifting the mud by swinging its bill repeatedly from side to side after the fashion of an Avocet or as I have seen a Spoonbill act. From time to time it stopped this movement and picked something up. From then until December 16th, when it was last seen by Mr. Turner, the bird was continually watched there, and at an extensive pool some three miles away, by a number of observers, including Messrs. P. Askey, R. H. Dunt, W. Ramsden, A. R. Sumerfield and Dr. E. L. Arnold ; Mr. Dunt observed the sweeping side to side movement of the bill at this second pool. On November 26th, I was watching it as it flew at some height and saw it drop from the sky in a sort of twisting dive at remarkable speed ; Mr. Turner also witnessed a similar descent.

A. W. BOYD.

ARCTIC TERN AND KITTIWAKE BREEDING IN SCILLY.

In the recent paper by Lt.-Col. Ryves and Miss Quick on the Status of Birds breeding in Cornwall and Scilly since 1906 it is stated (*antea*, p. 38) that the Arctic Tern (*Sterna macrura*) is believed to be not breeding now. On a visit to Annet on June 15th, 1945, I found 31 nests of this species, one of which contained a newly hatched chick, while the rest contained eggs. As I had estimated 30 pairs in the air before finding the nests it seems probable that all the nests were found. There were no other terns on this island. Two Arctic Terns were also often to be seen by Carn Near on Tresco about this date, and on June 13th two scolded us when we were on the west side of Bryher, but no nests were found on either of these islands.

In the same paper it is also stated that the Kittiwake (*Rissa t. tridactyla*) has apparently only once been recorded as breeding since 1900. On June 16th, 1945, there were between 20 and 30 occupied nests on Gorregan, and at least four, but probably twelve or fifteen, occupied nests on Menavawr.

E. J. M. BUXTON.

LITTLE GULL FOLLOWING PLOUGH.

WHEN I was ploughing in a field at Lodge Farm, Little Clacton, Essex, on December 5th, 1944, an immature Little Gull (*Larus minutus*) spent several hours following my plough; at first alone, and then in company with Common and Black-headed Gulls. In common with other gulls it was quite fearless of the tractor and I was able to note its very small size, speckled head with black spot behind the eye, grey mantle, white tail with broad black terminal band and the very broad black bar from the wing-tips along front edge of wings to carpal joint, where it curved backwards to nearly meet in the middle of the back; bill black, legs deep flesh-coloured.

Again on January 3rd, 1946, I twice noticed a Little Gull, with a huge company of Common and Black-headed Gulls, following my plough. This time it did not stay long.

In both cases the birds were quite healthy, not oiled or injured in any way.

R. M. ROPER.

PROBABLE BRÜNNICH'S GUILLEMOT IN CO. DUBLIN.

ON October 25th, 1945, from the East Pier, Dunleary (formerly Kingstown), I saw a bird which I believe to have been a Brünnich's Guillemot (*Uria l. lomvia*). It was on the sea outside the Harbour not more than 30 yards from the wall and was preening so actively that it did not seem to notice me. The light was good and I watched with glasses. The head and back looked black, and the black of the head came down to the eye and curving down around the white cheek formed a collar broken in front. The bill was black with a faint whitish line where the mandibles met but not extending to the tip. Meanwhile there was a Common Guillemot feeding at about 100 yards farther out and the differences in colour, extent of black on head, and thickness of bill were very noticeable.

I cannot find any certain Irish record of a Brünnich's Guillemot, but on one other occasion, September 24th, 1938, at Kilcoole, Co. Wicklow, I saw a similar bird (slightly oiled) at close quarters and I felt convinced it was a Brünnich's Guillemot. P. G. KENNEDY.

NEW WORK ON THE BIRDS OF LANCASHIRE.—Mr. Clifford Oakes, of 13, Olympia St., Burnley, Lancashire, whose book *The Birds of East Lancashire* (1939) will be known to readers, is engaged in the compilation of a new "Birds of Lancashire." The latest book on the birds of Lancashire as a whole are Howard Saunders's revision in 1892 of Mitchell's book of 1885 and an inaccurate account in a volume of the Victoria History.

Mr. Oakes and his co-authors, Messrs. R. A. H. Coombes and R. Wagstaffe, have already received promises of help from all parts of the county, but would like to get in touch with any others who can supply accurate data of the county's birds.

HAWFINCH AS PREY OF SPARROW-HAWK.—In connexion with Mr. K. R. Chandler's record (*antea*, p. 64) Mr. H. E. Pounds informs us that on July 4th, 1943, in a wood near Chelsham, Surrey, occupied by a pair of nesting Sparrow-Hawks (*Accipiter n. nisus*) he came across the feather remains of a Hawfinch (*Coccothraustes c. coccothraustes*) on the ground close to a young beech which stood near the "feeding-tree" used by the cock returning with prey. The nest contained young at the time and it seemed fairly obvious that the Hawfinch had formed part of the food brought to the young or killed and eaten by one of the adults, though no other remains of it could be traced. Mr. Pounds has sent us one of the primary feathers.

GAIT OF CORN-BUNTING.—With reference to Mr. W. B. Alexander's note on this subject (*antea*, p. 53) we regret that at the time we overlooked our own note on the subject in the Additions and Corrections to *The Handbook*, Vol. v, p. 259, in which it is recorded on the authority of Mr. Walpole-Bond that the species "occasionally runs, quite fast." We should welcome any other observations.

EARLY JULY EMIGRATION OF SWIFTS.—Detailed notes received from Mr. G. L. Sandeman support Dr. Joy's observations (*antea*, p. 54) on the early July departure of some of our Swifts (*Apus a. apus*). Daily observation was kept at Spurn Point, Yorks., from May 18th to July 13th, 1942. Though a few birds were seen on most days nothing significant in the way of movement occurred until July 3rd, when 200 to 300, in small parties, were seen going south. From then till the 9th, passage by day was almost continuous, over 5,000 birds being counted, with a maximum of 1,795 on the 6th. On each day the birds were coasting south against a light southerly breeze. On the 10th the wind blew strongly from the S.W. with rain, and only one party of nine passed and in like conditions on the 11th and 12th, none.

MONTAGU'S HARRIERS IN HEREFORDSHIRE.—Mr. Martin Shuttleworth sends us particulars of a pair of Montagu's Harriers (*Circus pygargus*) which he saw on three occasions in the course of September 15th, 1945, at Ross-on-Wye. The absence of white rump and dark bar across the secondaries were well seen in the male bird.

WHOOPER SWANS IN WARWICKSHIRE.—We are informed by Mr. C. A. Norris that two Whooper Swans (*Cygnus cygnus*) were seen by him at Compton Verney on the lower pool on a number of occasions from December 16th, 1945, till December 30th. On the first occasion on which they were noted the Whoopers were very noisy and were being much disturbed by the resident Mute Swans. Although absent on January 5th they were again seen on January 14th, 1946, by F/Sgt. E. L. Roberts.

FLOCK OF BLACK-TAILED GODWITS IN HAMPSHIRE IN WINTER.—Major N. A. G. H. Beal sends us particulars of a flock of approximately fifty Black-tailed Godwits (*Limosa l. limosa*) observed on January 16th and 17th, 1946, at the estuary of the river Meon, Hants, an example of the increased frequency of winter flocks in recent years. Two birds in flight were heard giving a call described as a disyllabic "kwee-yit," only hoarse, with a suggestion of a whistle. This breeding-season note is occasionally heard from passage birds in spring, as noted in the Addenda to *The Handbook* (Vol. v, p. 280), but we have no record of it in winter.

BLACK-TAILED GODWITS ON THE SEVERN.—M. H. H. Davis informs us that in the autumn of 1945, Black-tailed Godwits (*Limosa l. limosa*) were present on the Severn near Slimbridge, Gloucestershire, in numbers unusual for the Severn and Bristol Channel area. The records are: August 26th, seventeen (Davis); September 4th, thirty; 7th, twenty-eight (R. E. Alley); 16th and 24th, twenty-four (Davis).

GREAT SKUAS OFF CHESHIRE COAST.—With reference to a record of a Great Skua (*Stercorarius s. skua*) at Hilbre on June 30th, 1940, which we commented on as an unusual date in reviewing the *Lancashire and Cheshire Fauna Committee Report for 1939-42* (*antea*, Vol. xxxviii, p. 359), Messrs Walter Griffiths and Norman F. Ellison inform us that on exactly the same date in 1945 they had good and close views of three of these birds when crossing from Hilbre Island to the mainland.

POMATORHINE SKUA OFF ANGLESEY.—Mr. R. H. Prestwich sends us particulars of an adult Pomatorhine Skua (*Stercorarius pomarinus*) of the dark-breasted form, which he saw while sailing off Roscolyn Head, Anglesey, on September 9th, 1945. The twisted tail-feathers were well seen. The species is scarce off the west coast.

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Contributors are asked to observe the following points, attention to which saves the waste of much editorial time on trivial alterations.

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BERNARD W. TUCKER, M.A., F.Z.S., M.B.O.U.

ASSISTED BY

NORMAN F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.
AND A. W. BOYD, M.C., M.A., F.Z.S., M.B.O.U.

CONTENTS OF NUMBER 7, VOL. XXXIX., JULY 1, 1946.

	PAGE
The Food of the Wigeon and Brent Goose. By J. W. Campbell	194
The Index of Heron Population, 1945. By W. B. Alexander. With supplementary note: The Balance of Population in the Heron. By David Lack	201
Report of the Black Redstart Inquiry for 1945. By R. S. R. Fitter	207
Notes :—	
Ravens nesting in a herony (Comdr. G. Hughes Onslow) ...	212
"Anting" by Starlings (William Baggaley) ...	212
Courtship feeding of Greenfinch (H. Tully, S. J. Teideman) ...	212
Half-roof on nest of Chaffinch (I. J. Ferguson Lees) ...	213
Display of Nuthatch in winter (Janette Caldwell) ...	213
"Injury-feigning" of Nuthatch (Howard Bentham) ...	213
Unusual feeding behaviour of tits (John B. Southern) ...	214
Coloration of soft parts of Crested Tit (P. A. Clancey) ...	214
Song-period of Goldcrest (A. H. Hall) ...	215
Note of Willow-Warbler (Miss S. M. Butlin) ...	215
Courtship feeding of Blackbird (Bertram M. A. Chappell) ...	215
Snowy Owls in Cornwall and Hampshire (V. R. Garrett, F. J. Goddard)	216
Little Owl's method of taking Pheasant chick by daylight (John C. S. Ellis)	217
Kestrels capturing birds in full flight (K. G. Spencer) ...	217
Nocturnal hovering of Kestrel (E. L. Roberts) ...	217
Party of Ospreys in Lanarkshire (P. A. Clancey) ...	218
Little Bitterns in Lancashire (Leslie L. Turner) ...	218
Bewick's Swans in London (Dr. G. Carmichael Low) ...	219
American Wigeon in Somerset and Gloucestershire (H. H. Davis, A. J. B. Thompson)	219
Egg-laying intervals of Shag (J. A. Gibb) ...	220
Gannets at some distance from the sea (Miss Mary Henderson)	221
Purple Sandpipers using elevated perches (Dr. N. F. Ticehurst)	222
Shorts Notes :—	
Occasional hovering by Passerine birds. Chiffchaff in Kent in winter. Early drumming of Lesser Spotted Woodpecker. Hoopoe in Gloucestershire and in County of London. Spoonbill in Devon. Numbers of Pintail in Essex and Somerset. Great Snipe in Lancashire. Black-headed Gull colonies overlooked in 1938 survey. Moorhen breeding in winter	222
Letter :—	
Share of sexes in incubation in Kentish Plover (William E. Glegg)	224

(194)

THE FOOD OF THE WIGEON AND BRENT GOOSE
BY
JAMES W. CAMPBELL.

The following report on the food of the Wigeon (*Anas penelope*) and Brent Goose (*Branta bernicla*) forms part of an inquiry into the food of British wildfowl, which I had been carrying out for some years before the outbreak of War. Since August 1939 no work on these lines has been possible and although the full programme has not by any means been completed, it is felt that the results which have been obtained are of sufficient interest to merit publication, as they may prove useful as a basis for further research. There is a vast, scattered, literature dealing with the food and feeding habits of both species, but there appears to have been no previous examination of the food contents of a series of stomachs. Correspondence requesting details of my findings which I had with the Wildfowl Inquiry Sub-Committee, when the Wildfowl Inquiry was being carried out, showed that an investigation of this sort was urgently needed. At that time considerable progress had been made with the Wigeon inquiry, but it was considered that it should be completed and worked out in some detail as a whole, before any information was given for publication. The publication of Vol. I. of the International Wildfowl Inquiry, *Factors affecting the General Status of Wild Duck and Wild Geese* (1941), however, showed that data already obtained by August 1939 would be of value in elucidating various aspects of the feeding habits and distribution of Wigeon and Brent, and therefore it was decided to work out results for publication as soon as possible before they became too much out of date. Unfortunately, opportunity for doing so has been limited. There has been no chance at all of working through the many field notes which have been collected, nor of consulting the literature on the subject for a refreshing of memory. Thus the present report, which must be regarded simply as a preliminary one, takes a form very different from that which was originally planned, and is confined mainly to the post-mortem findings.

As was pointed out previously (*antea*, Vol. xxx, p. 209), although much work has been done already on the food of British birds there are many aspects which have hardly been touched upon. Those of us who have carried out stomach examinations in the past have perhaps been too much concerned with the actual foods discovered, and have tended to ignore the various factors which may modify these findings. Not enough attention has been paid to the bird's environment or its activities prior to capture, nor has it been appreciated that the mode of capture itself may profoundly influence results. Once results of an examination of a series of stomach contents have been published, even though they may refer to only a few specimens, there is at once a tendency for these findings to be regarded as typical of that species. There is a danger also that when quoted without sufficient reference to the original text, they become liable to misrepresentation and distortion.

When the Wigeon investigation was being planned, it became clear that in order to get the fullest value from stomach examinations and to reduce the possibility of the drawing of false conclusions, it would be desirable to obtain information on the following points :—Locality, foods available, mode of capture, season when obtained, activities prior to capture, field observations on feeding habits, age, weather conditions, competitors for food supply. There is no need to detail here the importance of all these. It is obvious that Wigeon using fresh-water marshes, or grazing at the edges of inland lochs or reservoirs, will contain food different from those using estuary mud-flats or salttings for their source of food ; that there will be different foods available according to season ; that Wigeon ducklings hatched on inland lochs will be brought to maturity on foods other than *Zostera* ; that drought, storm and ice may affect the foods available and that disturbance at a favourite feeding bank may also have its effect. It is necessary however, to stress here the importance of mode of capture and foods available. It would not be difficult to obtain a series of Wigeon stomachs from a puntsman operating on an estuary, where Wigeon jostled and jackalled Brent Geese for a feed of *Zostera*, but it would be unfair to claim that the findings from these birds, which had been obtained perhaps from a few shots on the same feeding bank, were representative of the food of Wigeon generally. Likewise it would be wrong to examine only Wigeon from one area where the variety of Wigeon foods was limited. Therefore in order to present a true picture of the food of Wigeon and Brent it was decided that work would have to be carried out on the following lines :—

(a) It would be necessary to find an area with an abundant supply of foods which the birds might take, where as far as possible they were free from any external influences which might grossly interfere with their desired feeding habits. A careful ecological survey of this area at all seasons of the year would be desirable, and finally, in order to secure a true "cross section," to obtain regular, small samples of birds over a long period, rather than large supplies obtained en masse at irregular intervals.

(b) It would be necessary to obtain supplies of stomachs from as many areas as possible. In order to do so a letter explaining the objects of the inquiry and requesting assistance was published in the *Shooting Times and Field*. The response so far as quantity was concerned was disappointing, but the quality was of the highest order. In addition, a survey of all the areas from which material was obtained would have to be carried out, but unfortunately, owing to the interruption of the war, this has proved impossible.

The conditions enumerated in (a) were fully met for Wigeon in North Uist. Nowhere in Great Britain could better facilities be found for an investigation of this kind. The unique system of tidal, brackish, lochs full of *Zostera* bearing leaves of varying widths, *Potamogeton*, *Ruppia*, *Myriophyllum*, *Chara* and various algae ; sounds full of the broadest-leaved *Zostera* ; muddy-oozy

obans, sea pools, and strands where *Ulva* and *Enteromorpha* were dominant; fresh-water lochs with their special vegetations and flood-water pools and splashes in the machair where Wigeon could graze on fresh grasses, clovers and daisy, constituted the ideal area for an investigation of this nature. It was almost too good to be true that in addition there was an adequate Wigeon population with disturbance at a minimum. It proved possible here to collect a regular "sample supply" by flighting, stalking and moving, full details of which must wait until after the war.

For various reasons, attention to begin with was concentrated mainly on Wigeon and little progress has been made with a complete investigation into the food of Brent, but the data which have been obtained are included in this report. It is impossible to attempt an investigation of this kind without the co-operation of numerous correspondents, to all of whom I wish to express my sincere thanks for their assistance. Special acknowledgment is due to the following who obtained material for investigation, supported in many cases by detailed field notes and specimens of food plants:—

J. Bartholomew, C. G. Bird, A. Cameron, F. Cameron, I. Cameron, J. Chase, H. A. Cooke, R. A. H. Coombes, C. T. Dalgety, H. T. H. Foley, H. A. Gilbert, J. R. Girling, T. Mussett, A. R. Page, Messrs. Sawers, Ltd. (Glasgow), A. J. Waller.

In any investigation into the food of wild animals one of the chief problems is the correct identification of the material discovered. I wish therefore, to acknowledge my gratitude to Dr. K. G. Blair, M. S. Campbell, A. H. Gepp, Dr. I. Gordon, G. Tandy, W. R. Sherrin and J. R. le B. Tomlin, who have helped me in this way. I have especially to thank A. J. Wilmott, of the Department of Botany, British Museum (Natural History), not only for his identification of material, but also for the instruction that he gave me, which proved invaluable in making accurate determinations myself. Identifications of items of food from birds' insides are often difficult. In order to avoid repetition and needless labour by the various specialists concerned, it is suggested that steps should be taken at once by an appropriate authority, to form a reference collection at some convenient centre where it would be available for future workers. Thanks are also due to N. B. Kinnear, for his assistance in various ways, and to the members of my family for their constant encouragement.

RESULTS:—The upper portion of the alimentary tract (gullet, oesophagus, proventriculus and gizzard) only was examined. The gullet and oesophagus are important, as in full-fed birds they are often packed tight and strands of vegetable matter may protrude from the bill. 442 Wigeon from 12 different areas were examined, of which 344 contained food. Vegetable matter was present in 344 stomachs and animal matter in 37 stomachs. Examples were obtained for every month of the shooting season from August to February. Only 28 Brent Geese were examined, but all of these

contained food—vegetable matter in 28 and animal matter in 8. Details of the findings for Wigeon in the various areas are shown in Table A. and for Brent in Table D.

LOCALITY, DATE AND DETAILS:—Figures in brackets refer to stomachs which contained food; empty stomachs are not included. In some cases at the wish of the collector full details of locality have been withheld. Only in North Uist was it possible to carry out a full survey of the area used by the Wigeon, in order to determine accurately what foods were available throughout the year, and their precise distribution.

(A) Blackwater Estuary, Essex. Wigeon—obtained by flighting and samples from punt shots. Nov. 37—Feb. 38 (13), Dec. 38—Jan. 39 (11).

BRENT—By punt and flighting: Dec. 38—Feb. 39. Many field notes.

(B) Blakeney. Norfolk. Dec. 38. No details.

(C) Lune Estuary, Lancs. By flighting. Dec. 38 (1), Dec. 39—Jan. 40 (3), Jan. 41 (1). Field notes.

(D) South Wales. By punt. Dec. 37 (20), Dec. 38 (26), Jan.—Feb. 39 (15),

Many detailed notes on habits and foods. Specimens of local favourite Wigeon foods submitted for identification were *Enteromorpha* and *Salicornia*.

(E) Ulster. By punt. "From the Limavady district, County Derry," Nov. 38—Feb. 39. No details.

BRENT—as above.

(F) Solway Firth. By flighting and punt. Nov. 38 (1), Jan. 39 (2), Jan. 41 (1). Field notes.

(G) Firth of Forth. By flighting. Oct. 38 (6), Feb. 38 (6). Field notes.

(H) Beauly Firth. By flighting. Aug. 38 (6), Oct. 38 (2), Sept. 38 (12), Dec. 38—Jan. 39 (7). Many detailed field notes.

(I) Torrance, nr. Glasgow. By flighting. J. Bartholomew wrote: "The place where I shoot them is on flooded grassland. Where they spend the day I don't know; there are some lochs not far away where a few are to be seen, but they may come from Loch Lomond or the Firth of Clyde." Jan.—Feb. 38 (10), Oct.—Dec. 38 (11), Jan.—Feb. 39 (6).

(J) Loch Fyne, Argyll. By flighting. Jan. 39 (2) Dubhlach, Inveraray, and (2) from sea, Inveraray.

(K) North Uist. By flighting, stalking and moving. Jan—Feb. 35 (4), Oct.—Nov. 36 (20), Jan.—Feb. 37 (23), Oct.—Dec. 37 (46), Jan.—Feb. 38 (17), Oct.—Nov. 38 (33), Jan.—Feb. 39 (13). During the period Oct. 36—Feb. 39, a total of 263 Wigeon were killed on 97 days, which gives an average of 2.71 per day, the largest "bag" on any one day being 8, and thus sample conditions were adequately fulfilled. It was impossible to obtain samples for examination of Wigeon grazing at flood-water splashes, nor,

owing to the nature of the ground and tide conditions, could an adequate supply be obtained from the birds which regularly used the *Enteromorpha* flats. Thus both these foods are more important in N. Uist than is suggested by results in Table A. Extensive and thorough surveys were carried out on the distribution, quantity and conditions of growth of available foods in the area, and the following conclusions were formed concerning conditions during the period under review—

- (a) At all times the supply of foods which stomach examinations showed Wigeon in the area were taking, was very large and could have supported a much larger Wigeon population.
- (b) Many apparently suitable areas of supply were never or only very rarely used. This applied also to other districts in the Outer Hebrides.
- (c) No fluctuations in the amount of food available (*Ruppia*, *Zostera*, *Potamogeton*, *Enteromorpha*) occurred during this period, but one small bank of *Zostera marina* in an exposed position was undermined and washed away during severe gales.
- (d) The populations of Wigeon, Brent and Swans were remarkably constant. There was no evidence to suggest that the activities of Swans were having a detrimental effect on the food supply.
- (e) The disturbance factor was negligible, and there was no evidence to suggest that Wigeon were being forced to take foods other than those they desired.
- (f) Wind, tide, and rainfall, always important factors in the feeding habits of wildfowl, played an even more complex part than usual in the tortuous, land-locked intricacies of the Uist brackish lochs.
- (g) One of the objects of the surveys was to determine the relative abundance of the various food plants and whether they were equally accessible to Wigeon, in order to discover whether, in view of the widely-held opinion that *Zostera* is the favourite Wigeon food, any conclusions could be drawn concerning food preferences. It was found that there was an abundance of *Zostera* with leaf-widths ranging from 1-6 mm. in the area; that in many of the feeding places *Zostera* and *Ruppia*, etc. existed in great quantity together, subjected to the same environmental conditions, so that Wigeon could have taken *Zostera* rather than *Ruppia* had they wished to. Although there were ample stocks of broad-leaved 4-6 mm. *Zostera marina* available, Wigeon showed a definite preference for the finer-leaved forms, and throughout the period of the inquiry, *Ruppia* was taken, rather than *Zostera*.

BRENT—By flighting. Nov.—Dec. 1938. These were the Pale breasted form (*Branta b. hrota*).

- (L) Benbecula, Outer Hebrides (2). By flighting. Oct.—Nov. 35. These were included *antea* Vol. xxx, p. 214.

Foods identified—(1) Wigeon (Table A.). (A) Vegetable matter (344).

(a) *Enteromorpha* (64). This alga is an important Wigeon food. Its attraction for Wigeon has been well-known to wildfowlers throughout Great Britain for many years, although in many instances they have been unaware of its correct identity, and have even confused it with *Zostera*. Instances of this confusion came to light during the present inquiry. Specimens were received from S. Wales, where a correspondent considered it to be one of the chief local foods. *Enteromorpha* from some Wigeon stomachs from S. Wales when examined under microscope was found to be heavily coated with diatoms. J.W.C. has found *Enteromorpha* an important food on the Blackwater Estuary and in North Uist, but in the latter area owing to topographical features, tide, etc., it is difficult to obtain specimens for examination, and it is a far more important food item there than the present findings suggest. *Enteromorpha* was chief constituent in 6 (Essex), 4 (Lune), 29 (S. Wales), 4 (Forth), 3 (N. Uist). Further observations are needed concerning conditions of growth, and as it appears to increase during the autumn, it is important that surveys of foods available should not be confined to the summer months. All identified was the very fine form.

(b) *Ulva* (13). Chief constituent in 1 (S. Wales) stomach only.
 (c) *Cladophora* (8) occurred in small quantities only.
 (d) Other Algae (29). Small quantities only were present. Identified :—Green Algae—*Chætomorpha* sp. (3), ? *Rhizoclonium* sp., ? *Oedegonium* sp. 1.

Red Algae—*Heterosiphonia plumosa* (2), *Polyides rotundus* (1), ? *Ceramium rubrum* (7).

(e) Moss (4) identified :—*Hydnnum cuspidatum* (1), *Hydnnum cypresiforme* (1), small quantities only.

(f) *Chara* (5). Small quantities only, all from N. Uist.

(g) Grasses—Gramineae (42). Identified :—*Avena pratensis* (2), *Glyceria aquatica* (1), ? *Sclerochloa maritima* (1), ? *Catabrosa* sp. (1), *Festuca* sp. (13), *F. rubra* (2), *F. ovina* (5), *Triticum repens* (1). As many wildfowlers and ornithologists are aware, "grasses" other than sea grasses, form an important article of diet for Wigeon in many areas, especially in districts away from the coast, where Wigeon, often in very large numbers, can be seen grazing at the edges of reservoirs, lochs and floodwater. In the present investigation, grass was found to be chief constituent in 5 (Torrance), 3 (S. Wales), 3 (Ulster), 3 (Forth), 2 (Blackwater), 2 (Beaulx), 1 (Lune), 1 (North Uist), 1 (Benbecula). In N. Uist field experience showed that it was more important than this finding suggests, but it was almost impossible to obtain full-fed birds from the floodwater pools in the machair where they grazed.

LOCALITY	No. examined	VEGETABLE										ANIMAL										
		Entromorphpha	Ulvæ	Chlorophora	Other Algae	Moss	Chara	Grass	Barely	Ruppia	Zostera	Potamogeton	Salticorina	Clover	Other Green Plants	Seeds	Crustacea	Coleoptera	Diptera	Arachnida	Mollusca	Unidentified
Blackwater	24	7	—	—	—	—	2	—	—	—	17	—	5	—	1	4	—	—	—	—	—	—
Estuary, Essex	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—
Blakeney, Norfolk	5	3	—	—	—	—	1	—	—	—	24	1	2	—	—	—	—	—	—	—	—	—
Lune Estuary, Lancs.	61	40	9	2	14	2	—	7	—	—	12	—	—	11	—	—	1	—	—	—	—	10
South Wales	20	—	1	—	—	—	—	4	1	—	—	—	—	3	—	—	—	—	—	—	—	2
Ulster	4	2	1	1	—	—	—	—	—	—	—	—	—	4	—	—	1	—	—	—	—	—
Solway Firth	12	5	1	1	—	—	—	5	—	—	—	—	6	—	—	8	13	1	—	—	—	—
Firth of Forth	27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Beauly Firth	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Torrance, nr. Glasgow	27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Loch Fyne	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Argyll	4	—	—	—	—	—	—	1	—	—	—	—	—	2	—	—	2	—	—	—	—	—
North Uist	156	7	1	5	14	1	—	5	—	—	124	20	11	—	—	2	2	12	—	—	—	1
Benbecula	2	—	—	—	—	—	—	1	—	—	—	—	—	1	—	1	1	—	—	—	—	2
TOTAL, :-	344	64	13	8	29	4	5	42	3	124	87	12	25	18	23	54	9	1	2	1	21	3

(To be continued).

Wigeon. Table A, showing locality, number of full stomachs examined, foods present, and the number of stomachs in which the various foods occurred.

THE INDEX OF HERON POPULATION, 1945

BY

W. B. ALEXANDER.

THE number of reports on sites occupied by Herons in 1945, which were received at the Edward Grey Institute, was 137, or 26 more than in the previous year. This increase was mainly due to the co-operation of those taking part in rookery censuses, a number of whom sent in reports on heronries, several of which had not been counted since 1928. We are indebted to 66 informants, of whom a number have collected information from friends and correspondents. Of the heronries visited, 89 were in England, 9 in Wales, 18 in Scotland and 21 in Ireland. To the Rev. P. G. Kennedy we are again indebted for reports on 15 heronries in 7 counties of Eire, to Mr. A. Watson for information on 8 in north-east Scotland and to Mrs. Hodgkin, Mr. R. Chislett, Mr. A. H. Johnson and Mr. C. F. Tebbutt for reports on 4 each in Northumberland, Yorkshire, Staffordshire and Huntingdonshire. Major A. W. Boyd again supplied information for the 8 known sites in Cheshire and South Lancashire; Mr. B. Campbell, with the assistance of Dr. H. B. Elton, made a survey of the heronries of Breconshire, Radnorshire, Monmouthshire and Herefordshire; and the writer assisted by members of the Oxford Ornithological Society and the London Natural History Society obtained figures for all known heronries in the Thames drainage basin.

Perhaps as the result of disturbance due to the increased felling of trees in recent years, we have received reports of 10 heronries which do not appear to have been previously recorded. Of these Mr. A. Watson has reported 4 in Aberdeenshire with 6, 5, 4 and 2 nests respectively and one in Banffshire with 6 nests, Mr. A. W. Pearse one with about 6 nests in Somerset and Mr. R. G. Gordon one with at least 4 nests in Devon. Evidence is not forthcoming as to whether these are actually new or have been overlooked previously. Mr. J. Douglas Brown has reported that 5 pairs nested in 1945 at a site in Kirkcudbrightshire in the vicinity of which a single pair has bred for several years past. Mr. R. C. Prideaux reports that there were 10 nests in 1945 at a site in the Isle of Skye where there have annually been 2 nests each year for quite a few years. But the most remarkable report concerns a park in Middlesex, a county in which only occasional pairs of Herons have nested for many years past. Mr. E. W. Pearce reports (through the London Natural History Society) that there were one or two Heron's nests in a wood in this park in 1942, about 20 in 1943, and about 30 in 1944. In 1945 there were again about 30 nests occupied in this wood and about 17 in another wood in the same park.

Of the heronies counted in 1945, 92 were also counted in 1944 when they contained 1,681 nests. In 1945 they only contained 1,585 nests, a decrease of about 6 per cent.

Seventy-nine of the heronries counted in 1945 were included in the 1928 census, when they contained 1,530 nests. In 1945 they contained 1,585 nests, so that on the basis of this sample the index for 1945 as compared with 1928 is 104 per cent. In 1944 the index based on 1928 was 93 per cent., which gives an increase for 1945 of about 12 per cent.

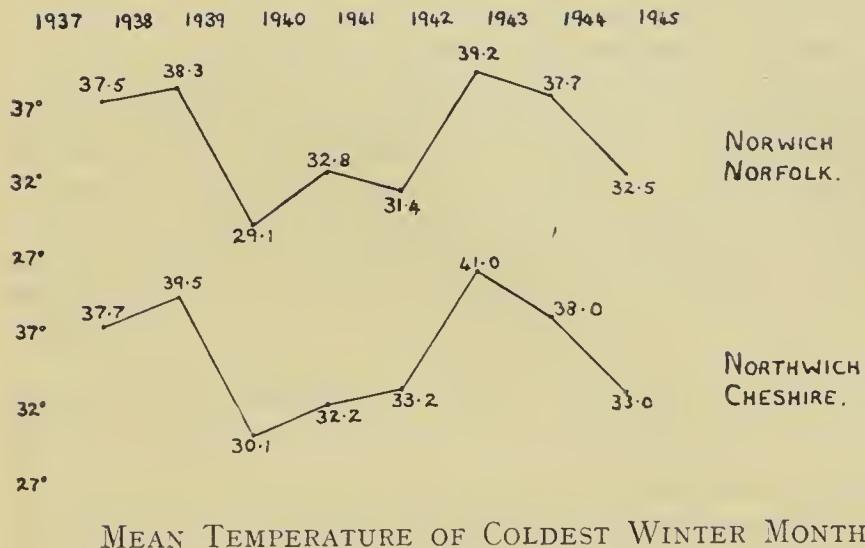
For 106 of the heronries counted in 1945 we have figures for one or more years when the population was normal (1928, 1936, 1937, 1938 and 1939). The average total population of these 106 heronries was 2,001, whilst in 1945 it was 1,850. This gives an index of 92 per cent., the same as the figure for 1944.

Accepting this latter index as the most reliable it may be noted that though the winter of 1944-45 was mainly mild there was a brief but severe spell of wintry conditions at the end of January, and the mean temperature of that month at Norwich was 32.5°F. In the previous year's report (xxxviii, p. 233), we gave a graph which indicated that during the past 17 years whenever the mean temperature for a winter month had been below 33°F., there had been a decrease in the number of Heron's breeding in the following spring. This figure as a measure of the severity of a winter is admittedly somewhat crude. It is probable that duration of frost is much more important than intensity in its effects on bird life, and it is in accordance with this view that the Heron population in 1945 remained stationary after a short severe spell and did not actually decrease.

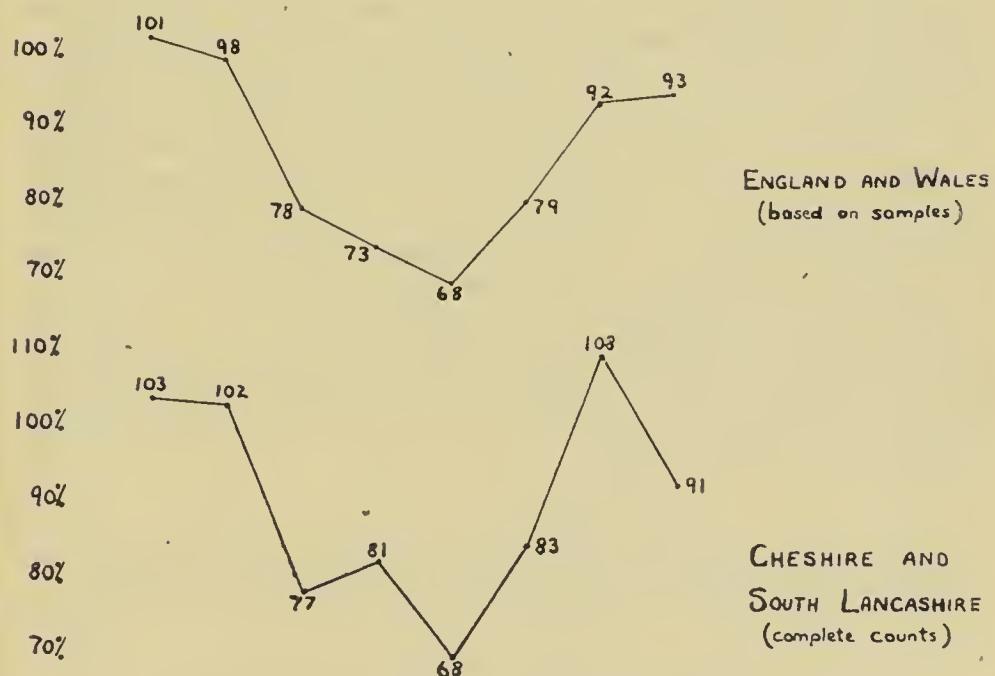
We may recall that in 1942, after three successive severe winters, our sample census showed that the breeding population of Herons in the British Isles was about 68 per cent. of its normal strength. It is of great interest to learn that a similar decrease was recorded in Holland. Brouwer (*Ardea* 32, p. 194, 1943) gives figures of 12 heronries in Noord-Friesland which in 1935 contained 452 nests and in 1942 only 275. In 1935 the index for the British Isles was 105 per cent. If the fluctuations in Holland have been similar, then, on the basis of this sample, the index for that country in 1942 was about 64 per cent.

The percentages for individual regions (omitting those for which the data are inadequate) are as follows:—

			1944	1945	Change
South-west England	...	...	90	87	- 3
Thames Drainage Area	...	...	95	97	+ 2
Midlands	...	...	96	82	- 14
North-west England	...	...	107	91	- 16
North-east England	...	—		113	—
Wales and Border Counties	...	—		126	—
Ireland	...	...	97	93	- 4
England and Wales	...	...	92	93	+ 1
British Isles	...	...	92	92	0



MEAN TEMPERATURE OF COLDEST WINTER MONTH



INDEX OF BREEDING POPULATION OF HERONS

Of the three areas completely surveyed in 1945, the counties of Hereford, Monmouth, Radnor and Brecon had not been covered since 1928, when 14 heronries containing an aggregate of 110 nests were recorded in the four counties. In 1945 only 8 heronries were located, but they contained an aggregate of 133 nests.

In the Thames Drainage Area 20 heronries containing 387 nests were found in 1945. In 1928, 18 heronries containing 306 nests were recorded and in 1939, the last preceding year when the area was covered, 18 heronries containing 341 nests were counted.

In Cheshire and South Lancashire the 8 known heronries contained 238 nests in 1945. In 1944 they contained 279 nests and 3 single nests were also reported. This decrease still leaves the population well above the level of 1928, when 173 nests in 8 heronries were recorded.

It will be seen that all three sample areas appear to be well above the 1928 level. It is the great decrease in Eastern England, where the effects of the severe winters were most felt, which keeps the index for the whole country below normal.

The Cheshire and South Lancashire area is the only one for which we have almost complete figures for the period since 1939 during which there have been such marked fluctuations. In the accompanying graph the fluctuations in the index for that area are shown for comparison with those based on the samples for England and Wales as a whole. We are greatly indebted to Mr. Giles Owen for mean figures of the coldest month during each winter at Northwich, Cheshire, for comparison with the fluctuations in the Heron population of that area. It will be seen that they agree closely with those previously supplied by Mr. J. H. Willis for Norwich, Norfolk, which we have used for comparison with the fluctuations in the Heron population of England and Wales.

Finally, while expressing our gratitude to all those whose help in obtaining figures has made this report possible, we would ask that all who have been able to count heronries in 1946 would send the results to the author at the Edward Grey Institute, 7, Keble Road, Oxford, as soon as possible.

SUPPLEMENTARY NOTE:

THE BALANCE OF POPULATION IN THE HERON

BY

DAVID LACK

(Edward Grey Institute of Field Ornithology, Oxford).

The annual Heron census, now in its nineteenth year, is the first long-term census of a bird whose population is comparatively stable. Indeed it seems to be the first long-term census of any animal species whose population is stable, previous work having been mainly on rapidly increasing species, such as mankind or the Fulmar, and sometimes on rapidly decreasing species, such as the

Kite. Alexander (1944, 1945, and above) finds that the Heron shows a marked decrease in the spring following each hard winter, a quick return to par in the next two to three years, and then approximate stability until the next cold winter. He points out that if (as usually believed) the Heron does not breed until its second year, the marked recovery of the breeding population after only one year cannot be due to young birds raised in the spring following the severe winter. He therefore suggests that the decrease in the spring after a cold winter may be apparent rather than real, and due to failure to breed rather than to death. This latter view seems to me unlikely, and Elder (1945) is correct that the results are explicable in terms of mortality.

The great interest in the Heron figures is not the decrease after each hard winter, but the quick return to par and the subsequent remarkable stability until the next hard winter. If the Heron can increase in one year from 79 per cent. to 92 per cent. of par, why when the population is at par, cannot it increase in the next year in the same proportion *i.e.* to 116 per cent? A. J. Nicholson (1933) and others have shown that an animal population can remain in a state of balance only through the operation of one or more density-dependent mortality (or reproductive) factors. One may suppose that the Heron population is primarily controlled by a mortality factor which kills not only more individuals, but a greater proportion of individuals, in a year when the population density is high than in a year when it is low. When the population remains at par, the number of adults which die during the year is approximately equal to the number of first-year immature individuals which survive to breed in their second year. In a hard winter, an unusually large number of both adults and first-year birds die; hence next spring the breeding population is well below par, and next winter the density of adults and second-year birds is unusually low. If now, as postulated here, the proportionate mortality is much lower in a year of low density, then an unusually high proportion of adults and second-winter birds will survive to the following spring. This will account for the marked increase in the total of breeding pairs in the year following that of low density. The increase is due to the second-year birds, *i.e.* to those individuals which in their first winter survived the cold spell, and the extent of the increase is greatly influenced by the proportion of immature to older birds in the population. If the proportion of immature birds had been very high, the breeding population might have been able to return to par in one year, but in fact it usually takes two or three years to do this, as might be expected.

The above explanation in terms of a density-dependent mortality factor appears to fit all the facts. It remains to ask what this mortality factor may be. The three mortality factors whose operation most clearly depends on density are food shortage, predators and disease (Nicholson, *loc. cit.*). The Heron appears to have no serious predators (except man locally), practically nothing is known about

disease, but this seems unlikely to be concerned, and the likely cause would therefore seem to be food shortage. This would be an interesting problem to elucidate.

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REPORT OF THE BLACK REDSTART INQUIRY
FOR 1945*

BY
R. S. R. FITTER.

THIS is the second annual interim Report of the Black Redstart Inquiry, and deals with the breeding status of the Black Redstart (*Phoenicurus ochruros gibraltariensis*) in the British Isles in 1945, together with certain breeding records for former years that have come to hand since the publication of the first Report (Fitter, 1945).

On the information available up to March 1946, it can be stated that between six and eight pairs nested in three vice-counties (South Hampshire, East Sussex, Middlesex), and between 18 and 21 other singing males were present in six vice-counties (South Hampshire, East Sussex, East Kent, North Essex, Middlesex, East Suffolk) during the breeding-season. Comparative figures for former years are given in Table I, which includes some hitherto unpublished records for South Hampshire (Bartley, Southampton) and East Sussex (Pett) for former years.

TABLE I. BLACK REDSTARTS IN ENGLAND IN THE BREEDING-SEASON, 1936-45.

Year.	Pairs recorded breeding.	Vice-counties where pairs bred.	Non-breeding males.	Vice-counties where non-breeding males present.	Vice-counties where birds present.	Total present.
1936	3-4	1-2	1	1	1	1-2
1937	5	2	—	—	—	2
1938	4	2	1	1	1	2
1939	4	2	1	1	1	2
1940	7	3	7-8	2-3	4-5	
1941	7	4	7-8	5-6	7	
1942	6-7	5-6	41-48	9	11	
1943	14-15	6	26-29	6-7	10	
1944	10-11	6	16	4	6	
1945	6-8	3	18-21	5-6	6	

Too much must not be read into these figures, which represent recorded and actual occurrences. First, the Cornish breeding locality is completely omitted from the table, as no exact information about it has ever been published; Vol. ii of *The Handbook*, issued in October, 1938, merely stated that the bird had bred in S.W. England since 1929. Second, the Medway breeding locality of 1940-43 has been assumed, in default of exact information, to be in v-c. 16 (West Kent). Third, the fact that each year fresh records relating to former years are received suggests that the figures in Table I must be taken as provisional, though it is unlikely that any major changes will be required. Fourth, it must be remembered that wartime difficulties have prevented visits

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to many localities, so that the figures are not strictly comparable from year to year. In particular, no visits were paid in 1944 to Dover, where birds were present in both 1943 and 1945, nor in 1945 to Aldeburgh, Ramsgate or the Medway, where pairs bred in 1943 or 1944.

Even when these shortcomings have been allowed for, however, Table I suggests that following a steady period from 1936 to 1939 an increase began in 1940, reached a peak in 1942-43, and has probably since slightly receded. As breeding is hard to prove but singing males are conspicuous, the number of pairs known to have bred is a less useful guide than the number of non-breeding males, and particularly the number of vice-counties in which the bird is known to have been present. The increase in breeding pairs would have been greater had the three pairs which nested annually at Wembley from 1926 onwards not deserted the site after 1941.

The fact that in one or more of the years 1942-45 Black Redstarts have been seen in the breeding-season in the following towns on or near the south-east coast strongly suggests that an intensive search would discover more: Lowestoft, Ipswich, Aldeburgh, Colchester, Maidstone, Whitstable, Dover, Ramsgate, Margate, Hastings, St. Leonards-on-Sea, Portsmouth, Southampton. Observers are therefore urged to keep a keen look-out in 1946. Records should be sent to R. S. R. Fitter, 39, South Grove House, London, N.6.

I am much indebted to the 65 observers whose records have been included in the following summary, or who have helped the inquiry with information, and shall be grateful for their continued co-operation in 1946.

V-C. 1-2 CORNWALL.

Col. B. H. Ryves had no report of Black Redstarts in Cornwall during the breeding-season, nor does he know of anyone who visited the breeding area. On August 16th, Mr. A. Darlington and his wife saw a juvenile Black Redstart (and possibly two others) on steep cliffs between Widemouth Bay and Bude (V-C. 2). A careful search revealed no adults, and it is impossible to say whether this bird was reared in the neighbourhood.

V-C. 3 SOUTH DEVON.

No trace of Black Redstarts in mid-June at Burlescombe, where a pair nested in 1942 (A. Darlington).

V-C. 11 SOUTH HAMPSHIRE.

Bartley (between Totton and Cadnam) : a pair successfully reared a brood of four in a nest on a beam about 7 ft. up in an old stable in 1943 ; they did not return in 1944 or 1945 (F. Turton, per R. E. Williams) ; the observer is familiar with the Common Redstart (*Phoenicurus p. phoenicurus*), and was much struck by the blackness of the male of the breeding pair.

Portsmouth & Southsea: a pair were seen feeding at least two young in a blitzed area three times in June (D. W. Bishop, *per* R. E. Williams); this was in a different area from Palmerston Road, where Mr. B. Vesey-Fitzgerald was informed of a pair nesting in ruined buildings, but could get no proof. It was in Palmerston Road that the unsubstantiated 1943 bird was said to have occurred. Mr. D. J. Gunston had no records for 1945.

Southampton: Mr. B. Vesey-Fitzgerald reports that two pairs bred, one in the ruined church in the main road, and a second in a ruined house by St. Denys Station. In 1944 both these sites were occupied, and the St. Denys pair certainly nested. Both sites were also occupied in 1943, and it has not been recorded previously that breeding took place in that year, successfully at St. Denys, but probably unsuccessfully at the main road site. These new records have been incorporated in Table I.

V-C. 14 EAST SUSSEX.

Hastings & St. Leonards-on-Sea: one pair, which may have nested, and one (possibly two) other singing males, were reported in Hastings (H. G. Attlee, C. Ingram, N. W. Moore). One singing male frequented St. Leonards (H. G. Attlee, P. A. Emmerson, N. W. Moore, C. W. G. Paulson, N. F. Ticehurst, A. A. Wright).

Pett Level: one pair reared two broods in a derelict bungalow (H. A. R. Cawkell, P. A. D. Hollom, N. F. Ticehurst); on the beam where the nest was were seven other nests of similar type, some of which were definitely older than the one in use. This suggests either that one pair bred annually from 1938, or that one pair reared two broods in each year from 1942 to 1945, or that in one of these years more than one pair bred; the area was closed to the public during the war. Three birds, of which one was certainly an adult male and one certainly a juvenile were seen near the shore on October 3rd (A. A. Wright).

V-C. EAST KENT.

Dover: Major G. E. Took saw two pairs in Dover on April 26th, and when he was again on leave found birds using the same sites on July 31st, but with no trace of young. With reference to the statement in the 1943 Report (Fitter, 1944) that Black Redstarts might have nested in Dover for about ten years prior to that date, Major Took, who was resident in the area up to 1939, considers that he would not have overlooked them if they had been breeding there in the period 1933-39, but it must be remembered that the bird is sufficiently inconspicuous easily to escape notice if its presence is not suspected.

Dungeness: one was singing near the Lighthouse on October 4th (R. S. R. Fitter, P. A. D. Hollom). Singing is sufficiently unusual among passage birds, and usual among males continuing to occupy the breeding territory, even as late as October, to suggest the possibility of this bird having bred.

Margate: one singing in the town centre, June 21st (C. Ingram).
Ramsgate: no information for 1945.

V-C. 16 WEST KENT.

Medway area: no information for 1945.

V-C. 17 SURREY.

Croydon and Wandsworth: no information for 1945.

V-C. 19 NORTH ESSEX.

One singing in High Street, Colchester, May 14-15th (C. W. G. Paulson).

V-C. 20 HERTFORDSHIRE.

One was reported in *Trans. Herts. Nat. Hist. Soc.* (Vol. xxii, p. 78), to have been seen in Essendon, between Hatfield and Hertford, by Mr. L. S. Hodson on June 15th, 1944. In view of the lack of any evidence accompanying the record that the bird was not a Common Redstart, which is known to breed in the neighbourhood, the addition of new vice-county to the summer range of the Black Redstart in England must be regarded as not proven for the present.

V-C. 21 MIDDLESEX.

Information relating to that part of the City and County of London which lies within v-c. 21 has been supplied by the following observers: C. E. Baker, C. S. Bayne, H. Bentham, F. W. Borman, F. C. Bromley, L. I. Carrington, G. W. Collett, C. F. Cooke, A. Darlington, C. Dolley, R. Preston Donaldson, R. S. R. Fitter, H. G. Gould, C. H. B. Grant, R. W. Hale, A. G. Hancock, H. H. S. Hayward, F. J. Holroyde, Miss N. K. Hunnybun, Miss L. J. Johns, E. E. Johnson, G. Carmichael Low, E. Mann, C. P. Newcomb, E. R. Parrinder, E. G. Pedler, W. S. Pitt, Mrs. J. B. Priestley, G. Warburg, E. H. Warmington, Mrs. M. S. Wathen, and J. D. Wood; also nil returns from T. Bispham, Miss M. Curtis, A. S. Diamond, R. W. Hayman, B. A. Richards and A. L. N. Russell.

City of London: two, or possibly three, pairs nested in the Guildhall-Cripplegate area (C.F.C., H.G.G., A.G.H., C.P.N.); seven or eight other singing males were present, of which two or three were in the Guildhall-Cripplegate area (*i.e.* five singing males in all, including the breeding pairs), two in the Temple-Fetter Lane area, one in the area round St. Paul's Cathedral, one in the Walbrook area, and one in the Mincing Lane area.

Edmonton: none seen in the locality where one was singing in June, 1944 (L. J. Dosseter).

Kensington: one seen or heard on three occasions in late June (R.P.D., C.H.B.G., G.C.L.).

St. Pancras: one singing in Euston Road on May 21st (E.E.J.) was probably the same bird that frequented University College from April 13th to mid-June (J.D.W.).

Holborn: In spite of regular visits, none seen in Bedford Row area, where one sang in 1944 (F.J.H.).

Stepney: none found despite a careful search (A.D.) ; one singing opposite the London Hospital on September 10th (H.G.G.) was probably a wanderer from another area.

Wembley: none returned to the usual nest-site, the beam having been destroyed by a flying bomb, and only one doubtful record was obtained (G. W. Calvert, R. W. Hale).

Westminster: one singing, Savile Row, May (M.S.W.).

V-C 25 EAST SUFFOLK.

Aldeburgh: no information for 1945.

Ipswich: no record since 1942 (H. Scott).

Lowestoft: except for one singing on April 24th and May 7th, none were recorded between March and August (F. C. Cook, E. W. C. Jenner).

V-C 29 CAMBRIDGESHIRE.

None were recorded in Cambridge, and there is no evidence of any having occurred in Ely since 1942 (A.D.).

V-C 38 WARWICKSHIRE.

No information for Birmingham for 1945.

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NOTES.

RAVENS NESTING IN A HERONRY.

ON February 22nd, 1946, I received word from David Reid that a pair of Ravens (*Corvus c. corax*) were building a nest in a small Ayrshire heronry. I visited the site two days later and the nest, which could be distinguished from the Herons' by the presence of one or two pieces of sheep's wool visible from below, appeared to be almost completed.

Together and separately David Reid and I have kept the nest under observation since that date, and by all appearances at the time of writing, the young birds will soon be fledged, the outside of the nest and the ground below being now liberally "whitewashed."

The heronry, a small one containing about six occupied nests, is in a mixed wood of oak and ash with a sprinkling of big Scots firs. All the Herons' nests, old and new, and the Raven's, are in the conifers, one of which also contains what appears to be a previous year's Raven's nest. The two species appear to be on the best of terms though the Ravens are much the more wary.

This record gains in interest when taken in conjunction with recent records of Ravens nesting in rookeries (*antea*, Vol. xxxviii, pp. 53 and 120).

G. HUGHES ONSLOW.

“ANTING” BY STARLINGS.

A VARIANT of the curious performance by Starlings (*Sturnus v. vulgaris*) recorded by Mr. Tebbutt (*antea*, p. 84) was one of the sights to be seen at the London Zoo before the War. On the canal side of the Zoo, there was a small open-air enclosure, containing a large ants' nest; which was alive with ants. Starlings—always an odd bird—kept alighting on the nest, and took what appeared to me to be a bath, just as other birds take a dust-bath. The nest being constructed of very loose materials, the Starlings quickly sank into it up to their thighs, and then kicked the ants in all directions with their feet, after the manner of a scratching barnyard fowl: the head was then vigorously dipped into the ants and used as a scoop. The ants were then scooped under the wings first to one side and then the other.

The Starlings were far too engrossed in their task to take any notice of visitors, unless the visitors approached nearer than about five yards, and on each of the two occasions when I saw the performance I was one of a small crowd of mystified spectators.

WILLIAM BAGGALEY.

COURTSHIP FEEDING OF GREENFINCH.

ON or about July 25th, 1945, I saw a case of courtship feeding in the Greenfinch (*Chloris ch. chloris*). The hen bird was perched on an electric cable; the cock approached and facing in the same direction hovered over her. She stretched her head up towards

him and he, continuing to hover, stretched downwards and fed her.

H. TULLY.

ON April 9th, 1946, at 7.45 a.m. (G.M.T.), at North Bersted, Bognor Regis, Sussex, I saw a female Greenfinch (*Chloris ch. chloris*) crouching on the top of a roof. She was looking up with open beak. Above her a male was hovering with typical bat-like flight, with slow wing-beats, uttering a very vehement and excited version of the usual twittering song, often interspersed with the long-drawn-out "tsweee." His tail was widely outspread. As I watched, he descended on the back of the crouching female, and coition took place. Then, the male put his bill into the open beak of the female. I could not see whether or not any food passed between the two birds, but the action was exactly the same as a parent feeding a young bird at the nest. The female had kept her head upturned and her bill wide open all the time, as if she expected to be fed.

S. J. TEIDEMAN.

HALF-ROOF ON NEST OF CHAFFINCH.

ON May 1st, 1946, I found the partly-built nest of a Chaffinch (*Fringilla cælebs gengleri*) in a small hedge near Crawley, Sussex. On May 6th I again visited the nest and found the hen Chaffinch sitting on three eggs. Along one side of the nest and up to about two inches above it was a thin mat of white hairs and feathers and I thought that the lining must have been partly displaced. However, three days later, I found to my amazement that moss and grasses had been added to this, forming a thick cover round and over about a third of the nest—an extra wall about one and a half inches high, giving the nest an extremely lop-sided appearance. On May 14th I found the eggs on the ground and the nest hanging in shreds. The birds have now built again—a perfectly normal nest—using the material from the former one, some two or three yards away.

I. J. FERGUSON LEES.

DISPLAY OF NUTHATCH IN WINTER.

WITH reference to the note by F. Colart under this heading (*antea*, p. 116), I suggest that the display observed was aggressive in nature. The Nuthatches (*Sitta europæa affinis*) in my garden generally chase the other birds from food by lunging at them with their bills, but on two or three occasions during the past winter I have observed a Nuthatch display as recorded towards House-Sparrows (*Passer d. domesticus*), advancing slowly with fanning wings and the tail fully spread with the white spots showing.

JANETTE CALDWELL.

[We referred to the probability of the display being aggressive in an editorial comment on the note referred to, but mentioned that Venables observed that in aggressive displays towards a stuffed mount the tail was not spread as in the sex display. The present note shows that this is not a constant difference.—EDS.]

"INJURY-FEIGNING" OF NUTHATCH.

WITH reference to Major Took's note upon the above subject (*antea*, p. 117), I am informed by a friend, the accuracy of whose observation I have no reason to doubt, that a year or two ago, he was watching a brood of young Nuthatches (*Sitta europaea affinis*) which had recently left the nest; upon the near approach of a cat, one of the adult birds immediately descended to the ground, over which it moved rapidly with drooping, outspread wings in much the same manner as described by your correspondent. HOWARD BENTHAM.

UNUSUAL FEEDING BEHAVIOUR OF TITS.

WITH reference to Mr. J. H. Owen's note under this heading (*antea*, Vol. xxxviii, p. 173), describing Marsh and Coal Tits carrying off and hiding small black slugs, I have also observed this behaviour in company with Mr. P. Maxwell. I observed it during October, November and some parts of December of 1944, at the edge of a wood at Rostherne, Cheshire.

At first we only saw Blue Tits (*Parus cæruleus obscurus*) carrying these small black objects dangling from their bills. We could not, at first, make out what they were. After we had watched them for a time, a Blue Tit alighted right by us, on the stone wall of a bridge, with one of these things in its bill, and we could clearly make it out to be a little black slug.

Later on we also observed Great Tits (*P. major newtoni*), Coal Tits (*P. ater britannicus*) and two Marsh-Tits (*P. palustris dresseri*) behaving in the same manner. One of the Marsh-Tits also alighted fairly near us and we had no difficulty in identifying the thing it had in its bill as a small black slug. We knew that at least one Great Tit was carrying the same things, because as it flew over the road, it dropped the one it was carrying and we were able to examine it.

Unfortunately, we could not confirm that the Coal-Tits were carrying the same things, but it seems highly probable that they were, as they had the same appearance, dangling from the birds' bills as they flew.

I cannot be sure of what they did with the slugs, except in the case of the Blue Tits, which were definitely hiding them in old ivy-covered tree-stumps in the wood. The Great Tits merely seemed to fly into the wood and drop their prey into the undergrowth, but I cannot be perfectly sure about this. They were finding the slugs in leaf-mould by a stream.

I must add that all the time we were observing the birds they were continually on the move backwards and forwards across the road.

JOHN B. SOUTHERN.

COLORATION OF SOFT PARTS OF CRESTED TIT.

WITHERBY, *Handbook of British Birds*, 1938, Vol. i, p. 262, gives the coloration of the soft parts of the Crested Tit (*Parus cristatus*) as follows: bill black; legs and feet olive-grey; iris red-brown.

During the course of the past three years I have had cause to prepare for research purposes some dozens of specimens of Crested Tit (*P. c. mitratus* and *P. c. scoticus*) and am in a position to make alterations to the above descriptive notes.

Juvenile and first winter birds have the irides hazel-coloured; the adults have rich red-brown irides, as given by Witherby. At all ages the legs and feet are pale blue-grey and not olive-grey. I suggest blackish-horn as a better description of the bill coloration in this species.

P. A. CLANCEY.

SONG-PERIOD OF GOLDCREST.

The Handbook's chart of song-periods shows that the Goldcrest (*Regulus r. anglorum*) is silent in December and song exceptional in late January. On December 26th and 30th, 1945, a Goldcrest was singing frequently in my garden (Farnham, Surrey), both in the morning and afternoon. On January 12th, 1946, I also heard the song about one hundred yards from here.

A. H. HALL.

NOTE OF WILLOW-WARBLER.

I WAS very interested to see the record of the threat-display used by a Willow-Warbler (*Phylloscopus t. trochilus*) (*antea*, p. 118), and particularly of the note uttered during the display.

I have heard this note given on many occasions in recent years by Willow-Warbblers nesting at Frocester, Gloucestershire, but only when a Cuckoo begins singing in the immediate vicinity. The note is most difficult to describe—a harsh, squeaky chittering quite unlike any other of the Willow-Warbler's calls with which I am familiar and it is uttered while the bird hops round the Cuckoo at close quarters.

SYBIL M. BUTLIN.

COURTSHIP FEEDING OF BLACKBIRD.

WITH reference to the record of a cock Blackbird (*Turdus m. merula*) attempting to feed a female and Mr. B. W. Tucker's allusion to recorded cases of courtship feeding in this species (*antea*, p. 89), I have observed such feeding or attempts at it on several occasions.

I have the following records:—

Abingdon, Berks, March 6th, 1945. Worm offered to and taken by female.

Sutton Courtenay, Berks, February 8th, 1946. Worm offered to female, but not taken.

Oxford, February 9th, 1946. Bacon rind offered, but not taken by female.

Oxford, about February 20th, 1946. Food (not identified, possibly bread) offered, but not observed to have been accepted.

The last two cases occurred in my garden and the second was an independent observation of my wife. All the actions occurred to the accompaniment of the usual display posturings and courtship behaviour.

The dates point to real courtship feeding as part of a display ceremony and not to feeding of the female during the incubation period such as occurs in many species. I also observed similar behaviour at Abingdon, Berks, during the period January to April, 1944.

BERTRAM M. A. CHAPPELL.

[Mr. Chappell's experience is surprising, as apart from the very small number of cases previously mentioned (p. 89), we know of no records of such behaviour in this common bird.—EDS.]

SNOWY OWLS IN CORNWALL AND HAMPSHIRE.

ON January 17th, 1946, about 4.15 p.m., I was driving between Liskeard and Launceston, when a large white owl flew in front of the car scarcely hedge-high. The flight was straight with very deliberate wing-beats. When I had followed it for about 50 yards, and had come close to it, the owl wheeled over the high hedge on the left-hand side of the road. I stopped the car, and the owl reappeared about 20-30 yards ahead and resumed its deliberate unswerving flight as before. I had followed it again for about 50 yards, at a more respectful distance, when it wheeled over the hedge on the right-hand side of the road and was lost to sight.

The bird was clearly a Snowy Owl (*Nyctea scandiaca*). It closely resembled the illustration by G. E. Lodge, in Plate 84 of Kirkman and Jourdain's *British Birds*. Though its plumage was flecked with brown, it was not so heavily marked or barred as in the illustration of a female on Plate 55 of *The Handbook*, and it seems probable that it was a male.

To give some idea of the impression of "whiteness" of its plumage, my companion, who is no ornithologist, asked me, "What sort of bird is that? Is it some sort of a sea-gull?"

V. R. GARRETT.

AT about 5 p.m. on January 22nd, 1946, at Woodlands, near Southampton, during a period of very cold weather, my attention was drawn to a very large white owl, which flew at some fifteen feet from the ground and about 50 feet ahead of me. It settled in an oak tree and I estimated its length as about 20 inches or slightly more. It remained perched for about 20 seconds and then flew off at right angles to me, passing within 20 feet, when I noticed some brown spots or irregular marks on the shoulder region. Apart from this the bird was almost pure white, but I could not observe the colour of the beak, or the eye, as the light was failing. The wing-beats were very powerful, quite different from those of the Barn-Owl (*Tyto a. alba*), with which I am very familiar, and it was also about twice the size of that species. It was clearly a Snowy Owl (*Nyctea scandiaca*). I searched the vicinity on subsequent evenings, but saw no more of the bird, and local enquiries failed to elicit that it had been seen by anyone else.

The locality is one of open fields surrounded by small copses and woods on the edge of the New Forest, with many open spaces of gorse and heather.

F. J. GODDARD.

LITTLE OWL'S METHOD OF TAKING PHEASANT CHICK BY DAYLIGHT.

ON May 22nd, 1945, near High Hoyland in the West Riding of Yorkshire whilst I was crossing some rough grassland bearing a few wind-twisted oaks and thorns my attention was attracted to the foot of a dry stone wall by the continual "cheeping" of part of a brood of week-old Pheasants, the hen of which I discovered later "squatting" about four yards away on the remains of her brood under a bramble clump.

Hardly had I located the youngsters, from a distance of about 15 yards, when a Little Owl (*Athene noctua vidallii*) floated down from one of the oaks, to the level of the wall top, here about four feet high, and after hovering for a few seconds dropped to within about nine inches of the ground at the wall foot, dropped its right foot, claws extended, meanwhile "braking" with its wings, seized one of the chicks by the head and shoulders and turning flew off with it. Unfortunately in a long watch and a careful search I failed either to see the performance repeated or to discover the carcase.

I mention this occurrence as it was in this district in 1936-37 while assisting in the Little Owl Enquiry that I failed to procure evidence of either daylight feeding or the taking of any game chicks.

JOHN C. S. ELLIS.

KESTRELS CAPTURING BIRDS IN FULL FLIGHT.

I SHOULD like to comment upon a point raised by F. Colart (*antea*, p. 121), concerning the ability of the Kestrel (*Falco t. tinnunculus*) to capture adult birds in full flight.

Several miles from Burnley there is a very large roost of Starlings (*Sturnus vulgaris*), situated in a conifer plantation. Here, in the evening, as the Starling flocks pour in from all directions, one may see a small number of Kestrels soaring and gliding above the incoming birds. Very shortly, one of the former will fly down into a large gathering of the smaller birds, scattering a few from the outer edge of the "cloud," and pursuing one selected bird. The chase may continue over a good distance, and often the fugitive escapes by re-joining the flock. Occasionally, however, the Kestrel will, either by luck or by superior skill, capture the Starling in mid-air and glide down into the trees to consume its prey. I have seen as many as three birds brought down in this way during the course of a single evening. Since the Starling has a fairly long start in the chase, and is fully aware of its peril, I consider "full flight" to be a just phrase.

K. G. SPENCER.

NOCTURNAL HOVERING OF KESTREL.

ON the night of March 19th, 1946, I was crossing a field of rough pasture in Suffolk when my attention was attracted by a bird hovering about 30 feet above the ground. It was a very clear, bright night, and moving so as to bring the bird into silhouette

against the moon, which was just past full, I easily identified it as a Kestrel (*Falco t. tinnunculus*). I watched it at a range of about 20 yards for several minutes, noting distinctly the characteristic steady wing-beats, the depressed and spread tail and the general outline of the bird, which finally sidled away into the darkness. The time was 10.25 p.m. (G.M.T.). *The Handbook* mentions no nocturnal activities by this species.

E. L. ROBERTS.

PARTY OF OSPREYS IN LANARKSHIRE.

THE occurrence of a party of eight Ospreys (*Pandion h. haliaetus*) in the parish of Carmunnock, Lanarkshire, near that county's boundary with Renfrewshire, on March 27th, 1946, is of very considerable interest.

When first observed the birds were in a loose party flying in extremely leisurely fashion in a south-westerly direction, presumably making for the Clyde estuary. The salient specific criteria, viz., the pointed, angular, wings; medium-sized, pointed tail; dark brown and white coloration, were all seen to good advantage in perfect light. When last seen the birds were gyrating in a manner strongly reminiscent of that of other great Raptore. They were largely silent—only once did I hear the characteristic “kyeek.” I have no reliable information as to the species' past history in Lanarkshire, but, judging from McWilliam's remarks on Renfrewshire records, its rarity in the S.W. part of Scotland need scarcely be emphasized. The occurrence of a party in these parts is certainly unique.

P. A. CLANCEY.

LITTLE BITTERNS IN LANCASHIRE.

ON May 8th, 1945, while walking round a reed-bed situated a few miles from Manchester, I noticed an unidentified movement in the reeds, so I sent my dogs in to flush what I at first thought might have been a Water-Rail. For trained dogs these animals behaved in a very peculiar manner; they acted as if they had got hold of a scent, but could not understand why the subject would not break cover. On my wading towards the particular patch of reeds a bird got up which I identified as a Little Bittern (*Ixobrychus m. minutus*). Although this bird was only in view for a few seconds as it flew to another reed-bed, I was able to judge that in size it was rather larger than a Redshank (a bird I know intimately from the hide). The following details were noted: bill and head shaped like that of a heron, but on a smaller scale, and, like a suddenly startled heron, it appeared to rise with difficulty, legs dangling, but it then flew with fairly rapid wing-beats. Bill was dirty yellow in colour, but the iris was brilliant yellow in comparison (colour like the iris of a Sparrow-Hawk). It had a dark patch on the head; the mantle, back and rump were dark-brown and while flying a lighter-brown pattern was noticed on the wings.

On December 26th, 1945, while looking over the previously mentioned reed-bed, my friends and I noticed, about 30 feet away,

the reeds shaking. We stood quite still and noticed a bird (rather larger than a Redshank) climbing up the reeds which I again identified as a Little Bittern. The bird was in view for several seconds when a movement on our part caused it to drop from sight. The following details were noted : heron-like head and bill ; bill dirty yellow ; iris brilliant yellow ; neck streaked brown and dark brown ; mottled pattern on wing ; patch on head not greatly pronounced. The general overall colour of this bird was browner than, though not as contrasting as, the one seen in May. It was noticed that when it was climbing the reeds and making lunges into the foliage with its beak, the wings were beating the whole of the time as if to aid its balance. Although we tried hard the bird refused to be flushed. On December 29th, I saw it again climbing the reeds, but it was in view for only a couple of seconds. On January 1st, A. W. Boyd and I searched the reeds again, but as Mr. Boyd had anticipated, owing to the very severe weather, the bird had passed on.

LESLIE L. TURNER.

[The occurrence of two evidently' different Little Bitterns in the same locality with an interval of more than six months is of particular interest. The first bird was evidently a female and it seems equally clear that the second was a bird of the year retaining a good deal of the juvenile plumage, though Witherby (*Handbook*, Vol. iii, p. 155) states that the juvenile body-plumage is moulted in the first autumn.—EDS.]

BEWICK'S SWANS IN LONDON.

IN response to a telephone message on the morning of March 5th, 1946, that a flock of large white birds had arrived on one of the Barn Elms reservoirs on March 3rd, I later in the day went out to investigate. I found to my astonishment that the birds in question were a herd of Bewick's Swans (*Cygnus b. bewickii*), sixteen in number. They were comparatively tame, allowing one to stand fully exposed on the wall of the reservoir and inspect them with a telescope, but while I was doing so they kept closely bunched together. Apart from a single bird seen on a pond on Wanstead flats, on March 7th and following dates, in 1931, I know of no other records of this species for the London area. It was bitterly cold at the time, this no doubt accounting for their presence. They stayed four days, leaving as the weather improved on the 7th.

G. CARMICHAEL LOW.

AMERICAN WIGEON IN SOMERSET AND GLOUCESTERSHIRE.

ON January 27th, 1946, at Blagdon reservoir, Somerset, close views were obtained by Messrs. B. King and R. H. Poulding of a drake American Wigeon (*Anas americana*). Their accurate description was confirmed on the 28th, when I saw the bird at the same place, in company with about fifty common Wigeon (*A. penelope*). Under cover of a low hedge I was able to watch it (with

telescope) in a good light at little more than 100 yards range, and to note clearly such diagnostic characters as the white crown, the glossy blackish-green eye-patch, and the densely spotted greyish cheeks and neck. Both on the water and in flight it displayed the usual conspicuously white fore-wing, but compared with accompanying males of *A. penelope* the body plumage generally was darker and predominantly brown. That the bird showed immediate signs of alarm when approached in the open, and was one of the first to take wing, suggests that it was a genuinely wild visitor. The possibility, however, that it had escaped from confinement cannot be entirely ruled out.

The bird was still at Blagdon on February 5th, but it could not be found there on the 10th. What was, no doubt, the same individual was seen by several observers at Cheddar reservoir, on the opposite side of the Mendips, on March 2nd and 17th.

H. H. DAVIS.

ON March 9th, 1946, in company with another observer unfortunately inexperienced, I saw a male American Wigeon (*Anas americana*) on the River Severn between Frampton-on-Severn and the New Grounds.

The bird was seen first at c.150 yards' range, when its white head was noticed, and it was watched as it drifted past on the rising tide in company with a large number of Wigeon and Teal until the range shortened to less than 50 yards. Finally it drifted out of sight upstream, being in full view for 5-10 minutes in conditions of perfect visibility with 8 x 30 glasses.

The fore-head and top of head were white, the throat and "face" were dingy white; a broad dark mark around the eye extending to the back of the head was seen to be glossy green, the gloss only being apparent at certain angles. The back appeared to be the same colour as in a nearby Wigeon, the white stripe along the wing and the black stern were also like a normal Wigeon, but the white spot before the stern was much more noticeable and the flanks were a pinkish-lavender colour, which made the bird appear slightly darker than a nearby male Wigeon.

A sketch was made in the field and the bird was easily identified on reference to *The Handbook* and Coward's *Birds of the British Isles*.

A. J. B. THOMPSON.

[The Gloucestershire occurrence raises the question whether this bird and the one seen in Somerset were the same, but the fact that the Somerset bird was seen at Cheddar on March 2nd and again on March 17th, while the Gloucestershire one was seen on March 9th, seems against this possibility.—EDS.]

EGG-LAYING INTERVALS OF SHAG.

The Handbook of British Birds states (Vol. iv, p. 12), that the eggs of the Shag (*Phalacrocorax a. aristotelis*) are "apparently . . . laid at intervals of more than one day." The following more precise

notes may be of interest ; they were taken from nests in a colony on Trewarvas Headland, two miles west of Porthleven, South-west Cornwall, from April 4th to 27th, 1946. I was able to visit the colony daily, usually between 5 p.m. and 7 p.m. (B.S.T.).

The figures show that the normal interval is approximately three days. It may be noted that in the cases of pairs four and seven, where the intervals between the first and second eggs appear to be four days, the apparent intervals between the second and third are in both cases two days, suggesting that the second egg was laid after my visit on the day previous to that on which it was found, and that the real intervals were also in these cases approximately three days.

The repeated destruction of the eggs was performed by a local sportsman armed with an air-rifle ; exactly how the shattered remnants were evicted from the nest, I was unable to discover. In each case the pair utilized the same nest despite repeated destruction of the eggs, though additions to it, especially of green shoots of campion and thrift, were made throughout the egg-laying period.

Pair 1.

1st Egg—April 6th.
2nd Egg—,, 9th.
3rd Egg—,, 12th.

Pair 2.

1st Egg—April 6th.
2nd Egg—,, 9th.
3rd Egg—,, 12th.
Clutch destroyed April 13th.
4th Egg—April 27th.

Pair 3.

1st Egg—April 8th.
2nd Egg—,, 11th.
Clutch destroyed April 13th.
3rd Egg—April 18th.
4th Egg—,, 21st.
Clutch destroyed April 22nd.
5th Egg—April 27th.

Pair 4.

1st Egg—April 12th.
2nd Egg—,, 16th.
3rd Egg—,, 18th.

Pair 5.

1st Egg—April 16th.
2nd Egg—,, 19th.
3rd Egg—,, 22nd.

Pair 6.

1st Egg—April 18th.
2nd Egg—,, 21st.
3rd Egg—,, 23rd.

Pair 7.

1st Egg—April 20th.
2nd Egg—,, 24th.
3rd Egg—,, 26th.

Pair 8.

1st Egg—April 20th.
Egg destroyed April 22nd.
2nd Egg—April 23rd.
3rd Egg—,, 26th.

Pair 9.

1st Egg—April 23rd.
2nd Egg—,, 26th.

J. A. GIBB.

GANNETS AT SOME DISTANCE FROM THE SEA.

ON October 18th, 1945, while travelling by boat up Loch Shiel, on the borders of Argyll and Inverness, I saw a party of Gannets (*Sula bassana*), four adult and two immature birds. They were then about five miles S.W. of Glenfinnan, and flying S.W. It is about seven miles over the hills to the sea on the west, but by flying S.W. and following Loch Shiel for 12 miles, they would have only about two miles of land to cross to reach the sea. MARY HENDERSON.

PURPLE SANDPIPER USING ELEVATED PERCHES.

In his note (*antea*, p. 157) on Turnstones (*Arenaria i. interpres*) perching on elevated objects, Mr. D. D. Harber mentions incidentally that one party doing so contained a single Purple Sandpiper (*Calidris m. maritima*). As this habit does not appear to have been previously recorded for this species perhaps further instances may be cited. During the winters of 1928-29 to 1934-35, a party of Purple Sandpipers, varying in different years from 9 to 22, spent part of those seasons on the stone groynes and rock-reefs between St. Leonards and Bulverhythe, about a mile to the west. During the periods of high tide, when no feeding ground was available, they invariably perched on the steel structure beneath the deck of the pier at St. Leonards. This structure consists of stout cylindrical pillars, tied together by horizontal cross-rods and between these by diagonals. These latter, of about the same diameter as the defence tubular rods referred to as used by the Turnstones, join the horizontal bars at an angle of about 60 degrees. Curiously enough it was these diagonals that were favoured by the Sandpipers in preference to the horizontal rods. On them they stood in rows exactly like Starlings on the stays of a flag-staff. The lowermost rods are of course encrusted with barnacles, but at high tide the birds were mostly above the area thus affected.

N. F. TICEHURST.

OCCASIONAL HOVERING BY PASSERINE BIRDS.—In connexion with the notes on "Finches and other Passerines hovering" (*antea*, p. 63), Mr. C. W. Towler sends us other instances of species which do not normally hover doing so on occasions.

On August 2nd, 1945, he observed a Starling (*Sturnus v. vulgaris*) at Biggleswade, Bedfordshire, hovering in order to take elderberries which were inaccessible from a perch, though many others could have been secured in the normal manner. On October 20th, 1945, a hen Blackbird (*Turdus m. merula*) at the same place was seen hovering in order to feed on buckthorn berries; this bird hovered, snatched a berry in mid-air and then returned to its perch. It was seen to do this several times. On September 9th a Robin (*Erythacus rubecula melophilus*) hovered repeatedly in order to feed on blackberries.

CHIFFCHAFF IN KENT IN WINTER.—Mr. John S. Beesley sends us particulars of a Chiffchaff (*Phylloscopus c. collybita*) which he saw in his garden near Ravensbourne Station, Bromley, Kent on January 24th, 1946.

EARLY DRUMMING OF LESSER SPOTTED WOODPECKER.—Miss E. Crackles reports a Lesser Spotted Woodpecker (*Dryobates minor communis*) watched drumming at Wassand, East Yorks., on January 5th, 1946. Mr. H. G. Alexander's chart in *The Handbook* records exceptional drumming in the last week of January only.

HOOPOE IN GLOUCESTERSHIRE AND IN COUNTY OF LONDON.—Dr. Oliver H. Wild informs us that through the kindness of Miss P. Ratcliff he was able to watch a Hoopoe (*Upupa e. epops*) in the garden of Southam Delabere, near Cheltenham, where it was observed from November 2nd to 6th, 1945. Mr. A. Watkins also writes that his sister and a friend, both of whom knew the species well in Spain, watched one for about twenty minutes perched on the roof of a house in Drewstead Road, Streatham, during the week ending June 30th, 1945.

SPOONBILL IN DEVON.—Several observers have reported a Spoonbill (*Platalea l. leucorodia*) on the Exe Estuary. It was seen by Messrs. R. S. R. Fitter and R. C. Homes on January 5th, 1946; by Mr. Hugh Doubleday on Dawlish Warren on January 6th and 7th and on March 23rd by Mr. K. C. Searle. We understand that two of these birds appeared on the Exe in October, but that one subsequently disappeared and it is feared that it may have been shot.

NUMBERS OF PINTAIL IN ESSEX AND SOMERSET.—Mr. P. Gladstone informs us that on December 6th, 1945, he and his brother, Mr. E. W. Gladstone, saw over 300 Pintail (*Anas a. acuta*) on Abberton Reservoir, Essex. Most of these were in a single flock with Mallard, Wigeon, and Teal, although there were several small scattered parties. A large majority were drakes. It may be recalled that this is the same reservoir on which a quite remarkable number of Goldeneye were reported by Mr. Bispham in February, 1945 (*antea*, Vol. xxxviii, p. 279). The above is a quite phenomenal, and to the best of our knowledge unprecedented, number of Pintail for any fresh water in the British Isles, with the exception of a fully authenticated record of about the same number on Durleigh Reservoir, near Bridgwater, Somerset, on December 18th, 1945 (E. G. Holt, *Report on Somerset Birds*, 1945). It is natural to connect the great number of birds at Abberton with the close proximity of the reservoir to the sea. Durleigh is about seven miles from the Bristol Channel and the occurrence there is stated to have coincided with a gale.

GREAT SNIPE IN LANCASHIRE.—On November 11th, 1945, Major A. W. Boyd observed a Great Snipe (*Capella media*) at a sewage-farm on the outskirts of Manchester. The large size, dark appearance, and deliberate, straight and heavy flight were particularly noted. He learnt later that Mr. L. L. Turner had quite independently watched what was evidently the same bird, and in addition to noting its slow, direct flight had been fortunate enough to see it at rest on the mud and to notice its clearer breast markings when compared with those of the Common Snipe, a bird he knew intimately from the hide. Another Great Snipe was shot on this estate on October 20th and examined by Mr. Turner, who counted its sixteen tail-feathers.

BLACK-HEADED GULL COLONIES OVERLOOKED IN 1938 SURVEY.—Mr. J. R. M. Tennent informs us of a colony of Black-headed Gulls (*Larus r. ridibundus*) on the Leicestershire-Derbyshire border near Ashby de la Zouche which did not figure in the 1938 survey of colonies of this species (*antea*, Vol. xxxiii, pp. 202-221, 230-244, xxxiv, p. 93) and appears to have been established since then. According to fairly reliable reports the birds first bred in 1943. At present the colony extends on both sides of the county boundary. Another colony on the Lancashire-Cheshire boundary was omitted from the 1938 survey. This is at Statham on a stretch of land which was formerly in Cheshire, but is now politically part of Lancashire, known as Thelwall Eye, between the R. Mersey and the Manchester Ship Canal. Men working on the site informed Mr. Boyd that gulls first nested there in 1928 and have done so regularly ever since except for one or two years when the site was deserted. The number of pairs in the spring of 1946 was estimated by Dr. E. L. Arnold as about 200.

MOORHEN BREEDING IN WINTER.—Mr. H. E. Jenner informs us that on December 29th, 1945, he had a good view from a stationary train of two Moorhens (*Gallinula c. chloropus*) swimming on a pond beside the railway line near Woodbridge, Suffolk, accompanied by four young, which were not more than a week old.

LETTER.

SHARE OF SEXES IN INCUBATION IN KENTISH PLOVER.

To the Editors of BRITISH BIRDS.

SIRS,—The statement (*antea*, p. 58) of Fr. Haverschmidt that "It seems that field observations are inadequate on this point, at least in Great Britain" is an injustice to British ornithology and ornithologists. As far back as 1896 there is evidence that a British observer was active in the matter for in that year Boyd Alexander (*Zoologist*, 1896, p. 250), describing the nesting of this species near Dungeness Lighthouse, writes "I have found that the male alone of this species undertakes the task of incubation." F. C. R. Jourdain (*The British Bird Book*, edited by F. B. Kirkman, 1912, Vol. iii, p. 320) wrote "Both male and female share in incubation, but in fine weather the eggs are left for long periods exposed to the sun." T. A. Coward (*The Birds of the British Isles and their Eggs*, 1920, second series, p. 192) referring to this species, stated "Both sexes incubate, though it was formerly thought that in this habit they differed from the common bird (Ringed Plover)." During my earlier visits to the Camargue, probably in 1925, I obtained conclusive evidence on the part played by the sexes of this species in incubation. I secured photographs, which demonstrate that both sexes take their turn on the eggs. Although these photographs have never been published they have been exhibited before the members of a number of well-known societies. Writing on this species in the Camargue (*Ibis*, 1931, p. 431) I stated "In the case of one pair which I had under observation both male and female incubated, but the latter did most of the work." WILLIAM E. GLEGG.

[We are obliged to Mr. Glegg for drawing our attention to the note in his *Ibis* paper, but we cannot see the relevance of quoting the palpably "inadequate" observations of Boyd Alexander. Mr. Haverschmidt's note did not suggest that there were no British observations on the subject. But Mr. Jourdain's reference to brood-patches in *The Handbook*, which obviously supersedes anything he wrote in 1912, clearly implies that he considered more field observations were needed, and these our correspondents have helped to supply.—Eds.]

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BERNARD W. TUCKER, M.A., F.Z.S., M.B.O.U.

ASSISTED BY

NORMAN F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

AND A. W. BOYD, M.C., M.A., F.Z.S., M.B.O.U.

CONTENTS OF NUMBER 8, VOL. XXXIX., AUGUST 1, 1946.

	PAGE
The Food of the Wigeon and Brent Goose. By J. W. Campbell (concluded)	226
The Breeding of Marsh and Montagu's Harriers in North Wales in 1945. By A. W. Colling and E. B. Brown	233
Notes :—	
Song of female Greenfinch (I. J. Ferguson Lees)	244
Cock Linnet feeding hen during incubation (John N. Mead) ...	244
Chaffinch song with terminal click in England (M. J. Water- house)	244
White Wagtail roost (P. F. Holmes)	245
Courtship feeding of Willow-Tit (G. Beven)	245
Sun-bathing of Long-tailed Tit and Hedge-Sparrow (W. L. Colyer, G. Beven)	245
Young birds returning to nest (Edwin Cohen, David Gunston)	246
Pre-coital display of Chiffchaff (G. Beven)	246
Blackcap imitating notes of Nuthatch (A. A. Wright) ...	247
Display of Song-Thrush (Bernard F. Harvey)	247
"Injury-feigning" of Blackbird (G. Beven)	248
Unrecorded note of Green Woodpecker (Edwin Cohen) ...	248
Display of Cuckoo (Robert S. Wood)	248
Turtle-Dove wintering in Devonshire (Rev. F. C. Butters) ...	249
Nesting of Curlew in Buckinghamshire (E. J. M. Buxton) ...	249
Food-washing of Whimbrel and Dunlin (G. Beven, A. J. B. Thompson)	249
Temminck's Stint in Northamptonshire (R. E. Burton and I. J. Ferguson Lees)	250
Female Ringed Plover performing scrape-ceremony (Major Robert F. Ruttledge)	251
Little Ringed Plover in Kent (James M. Harrison) ...	251
Stone-Curlew using autumn-type display in spring (Stuart Smith)	252
Glaucous Gulls in N.E. Scotland (Adam Watson) ...	253
Unusual behaviour of Water-Rail (M. O. Milne-Redhead) ...	253
Short Notes :—	
Jackdaw's nest with ten eggs. Drumming of Great Spotted Woodpecker in September. Autumn drumming of Lesser Spotted Woodpecker. Turtle-Dove in Aberdeenshire. Moorhen attacking rat	254
Review :—	
<i>Glossarium Europae Avium.</i> By Harriet I. Jørgensen and Cecil I. Blackburne	255
Letters :—	
Parent birds probing amongst brood in nest (Stuart Smith) ...	255
Robin feeding young Song-Thrushes (Robert E. Groves) ...	256
The winter distribution of the Gannet in the Eastern Medi- terranean (Capt. Eric Hardy)	256

THE FOOD OF THE WIGEON AND BRENT GOOSE

BY

JAMES W. CAMPBELL.

(Concluded from page 200).

Foods identified—(i) Wigeon. (A) Vegetable matter (*continued*).

(h) Barley (3). Chief constituent in 1 (Beaul), (1) (Solway).
 (i) *Ruppia* (124). Occurred only in birds from North Uist, where it was chief constituent in 92 stomachs, and was present in 124 out of the 156 examined which contained food. In this area field observations supported the post-mortem results that *Ruppia* is of very great importance as a food. Much work was done on the distribution, conditions of growth, etc. of *Ruppia* in the brackish lochs of North Uist, which it has not yet proved possible to summarize. It will suffice for the present to state that at the time of the inquiry, the quantity of *Ruppia* available was immense, that so long as it was available Wigeon devoured the short, fine-growing *Ruppia* which is found in the shallow lochs rather than the coarser more straggling forms which occur in deeper waters. Ample supplies were available for Wigeon during the whole of their stay in the area, and during the inquiry years no fluctuations in amount occurred. In the shallowest lochs vast quantities of *Ruppia* are sometimes uprooted by gales and heaped upon the shores, where although no longer attractive to Wigeon, it is eagerly devoured by Red Deer and cattle. Stems, leaves, roots and fruit were taken by Wigeon.

LOCALITY	Stomachs	Leaves 1 mm.	2 mm.	3-4 mm.	Stems	Roots
North Uist	17	16	10	6	7	6
Blakeney	2	2	2	—	—	1
Essex	17	17	17	4	—	7
Loch Fyne	2	2	2	—	—	1
Beaul	5	5	. Not noted.		3	2
Forth	4	4	4	—	—	—
Ulster	12	10	9	6	—	8
South Wales	24	24	24	2	1	10
TOTAL:	83	80	68	18	8	36
						18

Wigeon. Table B, showing number of times leaves, stems and roots of *Zostera* occurred in 83 stomachs containing *Zostera*, and the frequency of occurrence of the various widths of leaves (shown in millimetres), noted for 78 stomachs.

(j) *Zostera* (87). This Wigeon food was chief constituent in 10 (Ulster), 10 (Essex), 4 (South Wales), 7 (N. Uist), 3 (Beaul), 1 (Loch Fyne). Leaves, stems and roots were taken (Table B). Width of leaves (noted in 78 cases):—1 mm. (68), 2 mm. (18), 3-4 mm. (8) (Table B). *Zostera* has been recognized for a very long time as a very important food for Wigeon and Brent. In the extensive scientific literature on the subject much emphasis is laid on the Wigeon-Brent-*Zostera* association, while the still vaster wildfowling literature of a more popular nature—no

account of Wigeon or Brent and wildfowling to-day appears to be complete without some reference to *Zostera*—is equally emphatic that this plant is of the utmost importance to these birds. It occurred to me, before I started stomach examinations, from observations made in the field, that other plants were also of some considerable importance. Having at an early age assimilated most of the wildfowling literature dealing with the British Isles, it seemed to me that perhaps *Zostera* had been “boomed” to the exclusion of other foods. It seemed remarkable that the status of any species of wildfowl in Great Britain should depend solely on one food plant. There were other factors too, which suggested to me that *Zostera* might not be so exclusively important in governing the winter distribution of Brent and Wigeon as one was led to believe. There was, and still is—the present inquiry was revealing on this point—much confusion amongst wildfowlers as to what really is *Zostera*. I have had a variety of vegetable matter pointed out as being *Zostera*, and this confusion continues. Perry (1944) mentions Whooper Swans feeding on “Freshwater *Zostera* Grass” in Loch Awe (Argyll), a fresh-water loch which can hardly be expected to harbour the true *Zostera* of botanists. Not so many years ago I came across one wildfowler, who can claim to be something of an authority nowadays, who professed to be able to determine from the odour of fresh-killed Wigeon whether they had been feeding on *Zostera* or not! In 1932 attention was called to the comparatively rapid decrease of *Zostera*, both at home and abroad, a decrease which investigation subsequently showed to have started some years earlier. There was also about this time, a reduction in the numbers of migratory wildfowl visiting this country, and the conclusion reached by many observers was that the wildfowl were not visiting this country because of the decrease in their winter food supply. Although this view was quite widely held, no one seems to have carried out any quantitative surveys of available foods, nor, which is remarkable when one remembers the numbers of Wigeon killed annually before the war, was any serious attempt made to examine Wigeon stomachs to determine the foods that they were taking. It is unfortunate, perhaps, that a decrease in *Zostera*, which has waxed and waned in one area that I know well, even during my own lifetime, should have coincided with a decrease in Wigeon, for it certainly led to the forming of some hasty conclusions unsupported by scientific evidence. There is much that could be discussed here concerning *Zostera*—its importance as a wildfowl food, the factors which may influence its growth, its recent and previous decreases and their possible causes—but this must suffice for the present. It is important, however, to mention now, that botanists are not yet agreed concerning the various forms of *Zostera* which they have

described, a point which may be of importance to ornithologists, owing to the different widths of leaves possessed by the different forms. In the present inquiry, therefore, no mention is made of these different forms, but the width of the leaves taken by Wigeon has been carefully studied, as it is a point which is probably of some concern to the Wigeon.

- (k) *Potamogeton* (12). Identified:—*Potamogeton pectinatus* (11), *Potamogeton crispus* (1), *Potamogeton* ? *natans* (1). *Potamogeton pectinatus* was the chief constituent in 10 stomachs from N. Uist, where it was abundant in certain of the brackish lochs. It is not so abundant in these after the New Year, as great masses float off, to be washed ashore by the winter gales. Stems, leaves, roots and fruit were taken by the Wigeon.
- (l) *Salicornia* (25). *Salicornia*, popularly known as "Glasswort" or "Marsh Samphire", was the chief constituent in 5 (Beaul Firth), 3 (Blackwater Estuary), 2 (S. Wales). From the last area specimens were received from a correspondent, who considered it an important food locally. The reproductive spikes, seeds and cotyledons are all eaten by Wigeon, but the present results showed that the latter are the most important, several Wigeon being completely gorged on them with much distension of the oesophagus. In many coastal areas *Salicornia* is abundant; it is the vegetable used in Samphire pickle. In the Wash area, where before the war the *Salicornia* harvest was quite a minor industry—it was even canned at a local factory—the quantity available as Wigeon food is enormous.
- (m) Clover (18). *Trifolium repens* was the chief constituent in 7 (Torrance), 2 (Ulster), 2 (Essex), 1 (North Uist). Stem leaves and roots were present.
- (n) Other green plants (23). Identified:—*Ranunculus* sp. (3), *Caltha palustris* (1), *Cochlearia* sp. (1), *Myriophyllum spicatum* (3), *Apium nodiflorum* (1), *Apium* sp. (8), *Bellis perennis* (1), *Aster Tripolium* (2), *Callitricha intermedia* (6), *Atriplex portulacoides* (2), *Triglochin* sp. (6), *Sparganium* sp. (1). Leaves in all cases, but stems also in the case of *Myriophyllum* and *Callitricha*. *Aster Tripolium* was chief constituent in 2 (Beaul Firth); *Callitricha intermedia* was chief constituent in 2 (Loch Fyne), 1 (Beaul Firth). *Triglochin* sp. was chief constituent in 5 (Beaul Firth).
- (o) Seeds (54). Identified:—Reproductive buds of *Ranunculus ficaria* (1), *Rubus fruticosus* ("bramble") (1), *Crataegus oxyacantha* ("Haw") (1), *Hippuris vulgaris* (1), *Aster Tripolium* (12), *Armeria maritima* (1), *Rumex* sp. (2), *Polygonum amphibium* (6), *Festuca ovina* (1). Seeds of *Aster Tripolium* were chief constituent in 6 (Beaul), and seeds of *Polygonum amphibium* in 1 (Torrance).
- (B) Animal Matter (37). Identified:—
- (a) Crustacea (9)—Ostracoda (1). Isopoda: *Idotea* sp. (3); Amphipoda: *Gammarus* sp. (4).

- (b) Insecta (3)—Coleoptera: *Aphodius punctatosulcatus* (1).
 Diptera (2).
 (c) Arachnida (1)—Araneæ (1).
 (d) Mollusca (21). *Hydrobia ulvae* (9), *Hydrobia ventrosa* (1), *Littorina saxatilis* (1), ? *Macoma balthica* (1), *Cardium edule* (1). In no case was animal matter the chief constituent; in some notably with *Gammarus* entangled in *Enteromorpha* it was probably accidental: likewise it is probable that many of the molluscs were not taken deliberately.

	1936	1937	1937	1938	1938	1939
North Uist	Oct.-Nov.	Jan.-Feb.	Oct.-Nov.	Jan.-Feb.	Oct.-Nov.	Feb.
No. examined	20	23	46	17	33	13
<i>Ruppia</i> ...	18	20	34	15	26	8
<i>Zostera</i> ...	1	2	3	4	7	4
<i>Potamogeton</i> ...	—	1	6	1	2	1
Algae ...	—	4	4	5	5	5

	1938	1938	1938	1938-1939
Beauly	Aug.	Sept.	Oct.	Dec.-Jan.
No. examined ...	6	12	2	7
<i>Zostera</i> ...	1	3	2	—
<i>Aster Tripolium</i> ...	4	5	1	—
Grass ...	1	—	—	4
<i>Salicornia</i> ...	—	5	—	—
<i>Triglochin</i> ...	3	2	—	—
Barley ...	—	—	—	2
Animal ...	...	1	3	—

	1937	1938	1939
South Wales	Dec..	"Winter"	Jan.-Feb.
No. examined ...	20	26	15
<i>Enteromorpha</i> ...	15	16	9
<i>Zostera</i> ...	15	6	3
<i>Salicornia</i> ...	7	2	2
Grass ...	—	6	1

	1938	1938	1939
Torrance	Jan.-Feb.	Oct.-Dec.	Jan.-Feb.
No. examined ...	10	11	6
Grass ...	5	5	3
Clover ...	5	7	—
<i>Apium</i> ...	3	4	1
Seeds ...	7	3	5

Wigeon. Table C.—Details for four areas, showing the more important foods present and how sample conditions were fulfilled by the examination of material collected over long periods.

(2) BRENT (Table D).

(A) Vegetable matter (28).

(a) *Enteromorpha* (12). The fine form only was present. An important food for Brent; chief constituent 5 (Essex), 1 (North Uist).

(b) *Ulva* (4). Only small quantities occurred.

(c) Other Algæ (2). Only small amounts were present. Identified: Brown Algæ: *Pilayella litoralis*; Red Algæ: *Polysiphonia fuscoidea*, ? *Ceramium*.

(d) *Zostera* (20). For long has been recognized as a very important food for Brent; chief constituent 8 (Ulster), 5 (Essex), 1 (Sussex). *Zostera* was present in a total of 20 birds; leaves occurred in 19, stems in 15, roots in 18. Width of leaves: 1 mm. in 17, 2 mm. in 11, 4-5 mm. in 1. No surveys were carried out on Brent foods, so it is impossible to judge whether narrow-leaved forms were taken by choice or necessity. In N. Uist, however, field observations suggested that the broader-leaved forms were the more attractive.

LOCALITY	No. examined	VEGETABLE							ANIMAL	
		<i>Enteromorpha</i>	<i>Ulva</i>	Other Algae	<i>Zostera</i>	Grass	Other Green Plants	Seeds	Crustacea	Mollusca
Blackwater Estuary, Essex.	12	8	2	1	8	3	2	1	3	1
Sussex	1	1	—	—	1	—	—	—	—	—
North Uist	3	3	—	1	—	—	—	—	—	—
Ulster	12	—	2	—	11	1	—	1	—	5
TOTAL:	28	12	4	2	20	4	2	2	3	6

Brent. Table D, showing locality, number of full stomachs examined, foods present, and the number of stomachs in which the various food occurred.

(e) Grasses—Gramineæ (4). Identified:—*Festuca* (3) ? *rubra*, chief constituent 3 (Essex). Stems, leaves and roots were present.

(f) Other green plants (2). Identified:—*Atriplex portulacoides* (1) leaves.

(g) Seeds (2). Identified:—*Armeria maritima*.

(B) Animal Matter (8). Identified:

(a) Crustacea (3)—Isopoda: *Idotea* sp. (1); Amphipoda: *Gammarius* sp. (2). Probably accidental, as they were entangled in *Enteromorpha*.

(b) Mollusca (6). *Hydrobia ulvae* (6). One stomach contained over 40 *H. ulvae* and about 20 unidentified molluscs.

REMARKS:—It has been impossible to include in this report a summary of all the information collected or received from correspondents during the inquiry; for this a further account will be necessary. Likewise there has been no opportunity for researches into the extensive literature on the subject, but the publication in

1941 of Volume I of the International Wildfowl Inquiry, which fortunately has been available for reference, besides providing a picture of conditions as they were before the war, indicates many points concerning which further information is needed. It is chapter III—"Distribution of *Zostera* (Eel grass, Wigeon grass) and other Seashore Plants in Relation to the Migrations of Wildfowl" by Dr. R. W. Butcher, which deals with the subjects with which the present inquiry was most closely concerned and raises questions on various aspects to which it is felt that these results provide some answer. One of the most important of these is food preferences or discrimination (p. 42), always a dangerous subject to dogmatize upon. Only in North Uist could satisfactory work be carried out in this, but the results of careful surveys and the post-mortem findings, suggest very strongly that Wigeon in this area preferred *Ruppia* to all other foods and also preferred the narrow-leaved *Zostera*, rather than the broad. The fact that narrow-leaved *Zostera* predominated in birds from other areas cannot be taken as evidence of discrimination, because one does not know whether broad-leaved *Zostera* was also available. This stresses how important surveys are if the most is to be made of stomach examination. Other possible maritime food plants which Wigeon and Brent might take are discussed on pages 42-45. The results of the present inquiry show that these have not been dealt with fully enough, there being no mention at all of *Salicornia* or the important salting vegetation. The relationship of *Zostera* beds to the numbers of migrating wildfowl is discussed (p. 41). Dr. Butcher mentions that it is held by many competent observers that the numbers of Brent and Wigeon are dependent on the quantity of *Zostera* available, but concludes that there is no reason to suppose that it is invariably the case that these birds are dependent on *Zostera* alone. It is felt that the results of this inquiry provide some comforting evidence in support of this conclusion. They also provide some information concerning foods other than *Zostera* which Wigeon may take during the winter months in areas where *Zostera* does not exist (p. 42).

It is suggested (p. 45) that *Ruppia* and other water plants including *Potamogeton* probably decrease rapidly in the autumn, and that although valuable in summer, may not be available in the same quantity in the winter, while the volume in winter of *Zostera* is about equal to that found in the summer. In North Uist no evidence of any rapid decrease in autumn was noted, and *Ruppia* was available in large quantity throughout the stay of the migrant Wigeon; the supply far exceeded the demands of the wildfowl population. In North Uist, decrease in *Potamogeton* was noted early in the New Year.

Feeding habits of Wigeon and Brent certainly vary in different localities, but it was interesting to find that stomach examinations, together with field observations, in the main did not support the view that the usual method of Wigeon is to nip off the grass blade by blade without waste (p. 45).

It is not proposed to trespass here into the preserves of the botanists, but an interesting account in the *Zoologist* for February 1890, shows that the decrease of *Zostera* had been noted in England far earlier than 1920, which is given (p. 35) as the year when the dying out was first noticeable. The account referred to forms part of a letter dated 31st March 1882, written by the late Colonel Russell, a well-known Essex wildfowler "I think they (Brent) will soon cease to visit us, the disturbance getting worse and worse, and the food failing more and more. The *Zostera marina* is gradually disappearing everywhere on the Essex coast, and in all the rivers. The first I heard of this disappearance was at Whitstable, in Kent, some forty years ago. The history of growth and increase of mud-flats and weed, and breaking up of the former and the disappearance of the latter, is curious. I do not know whether it would interest you."

"The Geese have less and less feeding ground every year ; there is hardly a place where they can sit at low water and feed far enough from the edge not to be liable to be disturbed, yet the geese of late years come more regularly than thirty to forty years ago; then in mild winters we often saw none, or next to none, through whole seasons. I know not why this is ; perhaps because, on account of a run of good breeding years, there are more of the birds ; or perhaps, as there is much less of the weed they eat, there may be less of it adrift at sea—for the geese used sometimes to remain all the winter without coming within sight of land."

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THE BREEDING OF MARSH AND MONTAGU'S HARRIERS IN NORTH WALES IN 1945

BY

A. W. COLLING AND E. B. BROWN.

University College of North Wales, Bangor.

(Plates 23-30).

MARSH-HARRIER.

IN 1945 the first recorded breeding of Marsh-Harriers (*Circus aeruginosus*) in recent years outside East Anglia took place in N. Wales, in which region the last known cases of nesting of this species were in Merionethshire in 1869 and 1877 (Forrest, 1907). The male bird was first seen by the writers in early July, when a brief view was obtained in the gathering dusk as it flew by, followed by several mobbing Rooks, and disappeared over a hedge. As a result a search of the neighbourhood was made and on July 10th a visit was paid to a lake about two miles from where the bird was first seen. Where it approached the lake, the path lay close to a large bed of reeds, and it was at this point that the male harrier suddenly flew up from the ground only 20 yards away. It rose almost vertically, uttering a startled, "quek-quek-quek-quek-quek," —an "alarm" call rather like, though slower than that of the male Montagu's Harrier. The behaviour of the bird, which circled higher and higher overhead instead of flying away, suggested the possibility of there being a nest nearby.

As soon as the observers were suitably concealed, the harrier, which had been soaring and gliding at a great height for some five minutes, began to descend fairly steeply with wings half-closed, and was soon circling quite close, about 30 feet above the ground. It was now possible for the first time to examine the bird in detail through glasses. The general body-colour was buffish-brown with streaked underparts : outer wing primaries black tipped ; secondaries grey; head with creamy patch on crown; rump buff and tail darker buff (not grey). It was soon joined by a second bird, which was a typical female of the species. The body colour in this case was a uniform dark brown, and the cream-coloured crown had a small patch of brown feathers in the middle. The wings seemed to be broader and shorter than those of the male and the central tail-feathers appeared longer than the lateral ones. The absence of two or three secondaries from the right wing, together with the general untidiness of the plumage, suggested that the female bird was already moulting.

It was noticed that in gliding the Marsh-Harriers' wings were held more horizontally than were those of the Montagu's Harriers, which the authors had previously been observing (pp. 241-243).

Both birds were in view for the greater part of the next three hours. The female remained close by, making short flights about

the reed-bed, and often perching for several minutes on a bush at the edge of the bog. The male flew further afield, and could be seen hunting at the far side of the lake. On two occasions he returned with prey, which the female received from him on the ground. It now became almost certain that the harriers had a nest within 100 yards of the watching position, but the low viewpoint was further limited by the tall reeds at the near edge of the swamp, and it was impossible to mark any particular spot to which the birds descended.

On the following day watching was begun from a good viewpoint about 200 yards from the suspected nesting area. The harriers were seen over the lake, and soon both male and female approached, carrying nesting material, and alighted together in the thickest and tallest part of the reed-bed. The male flew up and away almost immediately, but his mate stayed down. Half an hour later the male brought prey and settled nearby. The female flew from the reeds and received the prey from her mate on the ground. She then glided over the nesting area, calling softly several times before landing again among the reeds.

By further observation from different points, with a careful checking of bearings each time the female harrier landed with food, the position of the nest was soon accurately determined.

The harriers would not visit the nest as long as any humans were visible in the neighbourhood. When men approached within 200 yards the male would fly off across the lake and stay out of sight until the intruders had gone away. If on the wing at the time, the female would do the same, but if at the nest she stayed down. Thus it is unlikely that a watcher on foot would normally have obtained more than a distant glimpse of either bird. The behaviour of the male in allowing so close an approach and betraying the nesting locality on the first day was certainly exceptional.

Great care was taken, therefore, in carrying out observations and all unnecessary movements were avoided when the birds were in sight. When two watchers visited the nest, a third walked about the lake-side in full view, in order that the harriers would stay so far away that they could not see human beings at the nest. This procedure was quite effective, and the birds showed no hesitation in returning as soon as all was still again.

It was impossible to reach the nest by wading, as the bog was deep and treacherous, but the journey was accomplished safely by canoe on July 12th. The nest contained four chicks, ages ranging from about 12-18 days.

The nest was a bulky structure about 24 inches wide, resting on the reeds at water level and built up to a height of 18 inches. It consisted mainly of reed-stems mixed with fairly large twigs at the base, with a saucer-shaped hollow about 12 inches wide lined with finer material at the top. A thick growth of reeds (*Phragmites communis*) six to eight feet tall surrounded it on all sides.

The young birds, as is usual, differed considerably in size. Two were large and about equal in degree of development. The third

was smaller, and the fourth much smaller. They were covered with short down, white on the crown, and buffish over the rest of the body. The smallest bird was relatively scantily covered, its pink flesh showing through the down. The biggest chicks showed the beginnings of feather shafts in the wings and tail. Other features were : bill with upper mandible black, lower mandible pale; tongue flesh coloured; gape pale; cere pale yellow; irides dark; legs flesh-coloured to pale yellow.

These chicks seemed relatively less active than young Montagu's Harriers at the same stage of development, and they did not adopt the "threatening" attitude readily. When one of them was handled it made the same "angry" twittering sound as had been noted earlier in the case of Montagu's Harriers. All appeared well fed, and the large distension of their crops was very noticeable.

There was a large amount of excrement on the reed-stems around the nest, and the method of defaecation was witnessed. The smallest chick, despite its relative helplessness, crawled backwards to the edge of the nest, raised its hindquarters, and squirted its faeces up on to the reeds. The nest was quite clean, and contained no eggshells or food debris, though there were a few small feathers evidently shed by the female harrier. These were added to a collection of feathers and food pellets found at perching places around the lake-side from time to time.

At this stage the female remained close to the nesting area when not at the nest itself. The male brought food fairly frequently, but it was always taken to the nest by the female. Usually she would settle on dry ground to "prepare" the prey before taking it to the chicks. It was thought that young Moorhens (*Gallinula ch. chloropus*) formed the greater part of the food, and the examination of the remains of "kills" in the neighbourhood confirmed this supposition. Exchange of food from male to female took place in the air, from foot to foot or by dropping, as well as on the ground. Sometimes when rising to receive the prey, and often when taking the prey to the nest, the female uttered the "food" call. This was a slightly modified version of the sibilant whining which had been noted in the case of Montagu's Harriers. The difference may be expressed by writing the "food" call of Marsh-Harriers thus, "psee-oo, psee-oo," where the "oo" represents rather a drop in pitch than an extra syllable. The male made this call on one occasion as he glided over the reed-bed just after the female had taken the prey to the nest. The "alarm" call of the male described earlier was only noted twice. The female was never heard to make any sound other than the "food" call.

A second visit was paid to the nest on July 17th. The young birds were bigger and more active than when first seen, and assumed the "threatening" attitude when the reeds near the nest were moved. Their down was longer, and the dark brown primaries and secondaries and bastard wings of the two older chicks were over an inch long. The feather-sheaths were just showing in the wings

of the two smaller birds, and their beaks were less developed than those of the larger chicks. The legs of all were now bright yellow. The nest was again quite clean and contained no food remains.

Both adult harriers were frequently mobbed by Lapwings, Rooks, Starlings and Swallows, and a flock of Mallard was once seen to swerve threateningly towards the female as she was flying over the reed-bed. On another occasion, as the male was bringing food towards the nesting area he was mobbed persistently by a Raven. The harrier did not retaliate at first, but as soon as he had dropped the prey to his mate, he turned and chased the Raven, which fled croaking.

On July 28th the female was twice observed to carry food pellets away from the nest. On each occasion she rose from the nest with a pellet in her beak, transferred it to one of her talons in flight, and alighted to deposit it on dry ground about 40 yards away. These and other pellets were collected. Some of them were flattened and had short pieces of straw adhering to them, as if they had been trampled in the nest while still soft.

On the same day the male was again seen to take building material to the nest. As on the earlier occasion, he flew up and away from the nest immediately afterwards. The female was also seen carrying straw later in the day, but whether she took it to the nest is uncertain. Weis (1923), one of the best-known authorities on Marsh-Harriers, stated that he never observed a male taking material to the female's nest, and in general he considered that most males were very loth to set foot in it at any time. In the present case it may be said that though the male would land at the nest readily enough when carrying straw or prey, he was never known to stay there for more than a few seconds.

The behaviour of the female appeared quite normal on July 28th. She was receiving prey from the male as usual, and taking it to the nest, where she would stay as a rule for about 10-15 minutes. The belief that all was well is supported by the fact that the female was carrying pellets from the nest, and that she was also seen carrying straw. In spite of this, however, she was never seen to visit the nest after that date.

It had been increasingly obvious from the first day of watching that the female harrier was moulting, and by this time there were conspicuous gaps in her wings and tail. Several of her badly-worn primaries and secondaries and many of her smaller feathers had been found near her perching places.

On July 31st the male was landing at the nest and delivering the prey directly to the young. He did not stay to share out the food, but flew off immediately. The female was not seen at all, and this occasioned anxiety as to the welfare of the young birds, even though they were heard calling lustily each time the male arrived with food. It was felt that this case might prove similar to that described by Hosking (1943), but since the chicks were by this time about four to

five weeks old, they must have been fairly well feathered and quite able to help themselves to the food brought by the male.

To make certain of this, it was decided to pay a third visit to the nest on August 5th. As the nest was approached, at least two of the young birds fluttered away among the reeds, and one stayed in the nest. This remaining chick was a big, strong-looking bird, appearing almost twice the size of a young Montagu's Harrier of the same age. Its bulging crop probably accounted for its relative lack of concern at the sight of intruders. It made no attempt to flee, nor did it gape or assume the "threatening" attitude. As had been expected, the feathering was almost complete, except that small patches of down were still present on the breast and crown. The main features were: wing and body feathers of a uniform chocolate-brown, those on the breast with buff edges; wing coverts not appreciably lighter than primaries; chin creamy-buff; ear-coverts dark brown; legs and cere bright yellow. A rather striking difference from the figures and descriptions in *The Handbook* (1939) was in the colouring of the crown and nape. The small feathers showing through the down on these parts were of a bright rich orange. Whether the other young birds had this colouring was never ascertained.

The nest was much flattened and very untidy, and contained remnants of two birds and the half-picked leg of a rabbit. The presence of down and faeces not only in and around the nest, but in runways up to a radius of 5 yards away, showed that the young birds had been in the habit of straying from the nest for some time past. They were quite safe in doing this, as the surface of the bog was now drier and firmer than formerly.

During the following week the female was often seen quartering the reedy areas near the lake, accompanied occasionally by the male. She spent long periods at a point only about 60 yards from the watching position, and sometimes approached to within half that distance, but she showed no further interest in the nest or young, though the calls of the latter must frequently have been quite audible to her. The female was last seen on August 6th.

It had been noticeable for some time that bigger items of prey were being brought to the nest. Moorhens continued to form a large proportion of the food, but the male harrier was now tending to hunt farther afield over the drier ground, and young rabbits and pheasants began to figure prominently in the diet. Small rabbits and parts of rabbits were carried with ease, but a whole half-grown rabbit appeared to tax the harrier's lifting capacity to the utmost. There was a warren about 500 yards away from the nest, and he was often watched as he hunted there. On one occasion, a few minutes after stooping at this spot, he appeared flying very low, at times almost trailing the prey on the ground. His progress towards the nest was very slow, as he settled on the ground for a few minutes rest after each short laboured flight. After half an hour's effort he had brought the rabbit to within 40 yards of the nest, and then left it lying while he circled the reed bed. Next he flew back to the prey

and brought it a few yards nearer, and then settled on a bush nearby for a more lengthy rest. The last and most difficult stage of the harrier's journey to the nest lay over tall dense reeds, but unfortunately the watchers were unable to stay long enough to see if it was accomplished.

The young now received food less frequently, but despite the relative irregularity of his food visits, the male was seldom away from the nesting area for more than an hour. Between spells of hunting, he would fly back to the reed-bed and glide slowly to and fro above the nest as if to satisfy himself that all was well with the chicks. Thus, during one six-hour watch, the male brought no prey at all, but he came over the nest seven times at fairly frequent intervals.

The young harriers were quite noisy at this stage, and would call at any large bird passing within 50 yards. Perched well up on the reed stems, they were able to see the male as he approached from the lake, and their loud clamour of "food" calls was often the first indication that he was at hand. After the male had delivered prey and had flown away again, the cries of the young generally subsided, but sometimes the "food" calls gave place to a shrill "ick-erick-erick-erick," a more vigorous version of the "angry" twitter noted earlier. Experience with other young birds of prey suggests that this cry was uttered by the young harriers as they contended for possession of the food. Bickering among young Marsh-Harriers has been noted by Weis, and he describes how the recipient of the prey guards the booty with outspread wings, uttering angry cries, and keeping its brothers and sisters at a distance while it satisfies its own hunger.

One of the young birds was seen wing-flapping at reed-top level on August 6th and subsequently. The first actual flight was witnessed on August 11th, when a young harrier rose from the nest, fluttered about 30 yards on a circular course, and landed back at the nest. This was repeated at intervals, the bird returning to the nest each time. After a while the male arrived, carrying a Moorhen. As he circled overhead, this young bird rose to meet him, and the male dropped the Moorhen. However, the young harrier failed to catch it, and followed the prey down among the reeds. The male settled at the nest, and, contrary to his usual custom, stayed there for several minutes. The chick seen in flight on this date had a white down-covered head, and no orange colour was visible on the crown.

On the afternoon of August 15th, the male delivered part of a rabbit to the nest and flew away over the lake immediately. A minute later, a young bird rose from the nest, calling loudly and excitedly as it hovered and circled above the reed-bed, apparently much concerned about something at the nest. Attracted by the young one's cries, the male came straight back from the lake, flying at great speed, and wheeled around above the nest. The young bird, which had been flying expertly for fully two minutes in a

strong wind, now settled at the nest, and the male flew away again. The nest and its immediate surroundings were quite invisible from the watching position 40 yards away, and nothing was seen that might have accounted for the harriers' behaviour on this occasion. In view of later events, however, it may be noted here that rats, weasels and stoats were very abundant in the neighbourhood and that otters were said to be numerous.

So far only one young harrier, and never more than one, had been seen in flight at one time. . The bird flying on August 15th had an orange-coloured head, but it may have been the same bird as seen on August 11th, since by this time it could have shed its remaining down. Strict attention was now being paid to the calls of the young in order to count the number of separate voices. It was not easy to distinguish more than two voices when the young were close together at the nest, but when their cries came from different points among the reeds, the number of birds calling was more readily known. Thus, on the evening of August 15th, one young harrier had flown to a point 20 yards away from the nest. When the male approached with food shortly afterwards, three distinct voices were identified, two of them from the nest, and the third from the point where the other bird had settled among the reeds. It is certain, therefore, that three of the young were alive on August 15th. Whether any more than one learned to fly is not known, as other business made it impossible to watch the birds during the following week.

On August 22nd and 25th one young harrier was flying strongly for long distances around the lakeside, but it generally returned to the nesting area to rest, often perching on a bush to await the male. Exchange of food took place in mid-air, the young bird now being well able to catch the prey dropped by the parent. Just after sunset the young harrier would settle down for the night on the ground at the edge of the reed-bed about 40 yards from the nest. It soon became quite clear that all the food was being delivered to this single young bird, and nothing was to be seen or heard of the other young harriers. There was no longer any sign of life at the nest itself, and neither the male nor the surviving chick was seen to go there.

The watchers visited the nest again on August 26th and as expected, found it completely deserted. Food remains, chiefly the bones and feathers of Moorhens and young Pheasants, and the leg bones of rabbits, littered the nest and its immediate surroundings. A small heap of feathers in one of the runways close to the nest was thought to be the remains of one of the young harriers, and these were collected. They were very dark brown, tipped with rufous buff, the larger primaries being about 10 inches long. All the large feathers had two to three inches of ensheathing quill at the base. Nothing at all remained of the skeleton or fleshy parts. The feathers, which were later definitely identified by the British Museum as those of a juvenile Marsh-Harrier, had not been pulled out entire, but

systematically ripped or bitten off at their bases. There was no other clue to indicate by what agency the young bird had met its death, and it was thought that rats or otters might have been responsible. On the other hand it is noteworthy that harriers themselves often pluck their feathered prey in precisely this manner, tearing off the large wing and tail feathers, but leaving little else. No trace was found of the other missing young.

In discussing the factors governing survival in Marsh-Harriers, Weis has shown that fratricide among the young in the nest is very prevalent, even in cases where the female feeds and tends them well. He goes on to say : "There is, however, considerable individual difference in the degree of care devoted by the females to their business. Some seem more inclined to enjoy a free and careless hunter's life as soon as the young no longer need warming, only returning home now and then to feed them. As a result, if the male troubles to bring anything in the way of food to the nest, the young will at an early stage learn to help themselves, when the strongest will naturally have the advantage, and it is more especially in such nests as these that fratricide is likely to occur." It is clear therefore that all the conditions liable to emphasize the tendency towards fratricide were present in the case under consideration. In addition, the male's food visits to the nest had become noticeably less frequent. This may have been due in some measure to the fact that he was moulting from early August onwards.

On August 27th the male harrier and the surviving young one were still at the lake, but during the following week they appeared to be ranging farther afield. The young bird was not seen any more, but the male continued to pay occasional visits to the nesting neighbourhood, being last seen there on September 8th.

Weis states that female Marsh-Harriers will breed when one year of age, but that the males are not sexually mature until two years old. He also indicates that older birds tend to settle down to nesting earlier in the season than do those breeding for the first time. The Keeper of Ornithology at the British Museum, to whom feathers were sent for checking, expressed the view that neither of the birds was fully mature. The lateness of nesting tends to support this conclusion.

It is thought that the male harrier was a second summer bird. Although a good deal of grey showed in the wings, one of his secondaries, picked up near a perching place, was brown with a large white patch, and entirely devoid of grey colouring. The tail was plain buff, without any visible trace of grey or of brown bars. This divergence from the *Handbook* (1939) description may have been due to the fact that the plumage was worn. It may be noted that another buff-tailed Marsh-Harrier was reported at Hornsea Mere, Yorkshire, in September, 1945 (*antea* Vol. xxxix, p. 27).

It is hoped that the analysis of the food pellets of these birds will form the subject of a later paper.



YOUNG MONTAGU'S HARRIERS : N. Wales, June 24th, 1945.
(Photographed by A. W. Coljing).



YOUNG MONTAGU'S HARRIERS : N. Wales, June 30th, 1945.
(Photographed by A. W. Colling).



YOUNG MONTAGU'S HARRIERS : N. Wales, June 30th, 1945.
(Photographed by A. W. Colling).



YOUNG MONTAGU'S HARRIERS NEARLY FLEDGED : N. Wales, July 8th, 1945.
(Photographed by A. W. Colling).



YOUNG MARSH-HARRIERS IN NEST : N. Wales, July 12th, 1945.
(Photographed by A. W. Colling).



YOUNG MARSH-HARRIERS : N. Wales, July 12th, 1945.

(Photographed by A. W. Colling).



YOUNG MARSH-HARRIERS : N. Wales, July 17th, 1945.
(Photographed by A. W. Colling).



YOUNG MARSH-HARRIER PARTLY FEATHERED : N. Wales, August 4th, 1945.
(Photographed by A. W. Colling).

MONTAGU'S HARRIER.

IN the same season the authors found Montagu's Harriers (*Circus pygargus*) breeding in North Wales for, so far as is known, the first time since 1900 (Forrest, 1907). Males of this species were seen frequenting an area of common land on June 9th and 16th, 1945. These were kept under observation, and a nest was found on June 23rd. It contained three young, about 10 to 14 days old, and one infertile egg. Subsequent watching in the neighbourhood of the nest established that there were two males but only one female. The two males were often seen flying together, and although both were in normal adult plumage, slight differences made it possible to recognize them individually. The "odd" bird was much in evidence throughout June and July, but he was never seen carrying prey, and there was nothing in his behaviour to suggest that he had a mate. He seemed to share the "territory" of the nesting pair, and was tolerated by both male and female even in the vicinity of the nest.

The nest was on firm ground among rushes, and consisted of a thin flattened layer of *Juncus* stems lining a space about twelve inches in diameter. The egg was of normal type, 42.3 mm. x 33.0 mm, green internally, and white without markings externally. Its weight (blown) was 2.095 gms. When first found the young were clothed in fairly long creamy down, which latter turned buffish. Other features were : legs and cere yellow; irides dark; tongue, gape and mandibles almost black.

Throughout the time that the young were in the nest, the female remained close at hand. At first she spent much time at the nest between meals, but as the young grew less dependent on her for warmth, she often took short flights about the nesting area, appearing to hunt. She was never seen to catch anything, and it appeared to be her mate who supplied all the food. The male never settled at the nest, but was generally met in the air by the female. Food exchange occurred mostly by dropping, but sometimes the prey was passed from foot to foot. When bringing prey the male generally approached the nesting area flying only 10 to 20 feet above ground level. Once, however, he appeared at a very great height and dived steeply with half-closed wings. As he dived, the female rose to meet him and the prey was exchanged from foot to foot fairly high in the air.

One of the young made a flight of nearly 100 yards on July 8th, and all had left the nest by July 14th. The whole family was still in evidence near the nesting area on July 31st, but the birds were not seen by the watchers after this date. During the latter part of July the female was in moult, and though she remained close at hand, she was not very active and did not appear to take any further part in the feeding of the young.

It is impossible to calculate the dates of egg-laying and hatching, especially where the young birds differ appreciably in age, but if

the incubation-period was about 28 days for each egg, and the fledging-period about four to five weeks, it is certain, even allowing a wide margin of error, that egg-laying began appreciably earlier than is indicated by Witherby *et al.* (1939) for this country.

Voice.

At the approach of humans and sometimes when mobbed near the nest by Lapwings or Curlews, the female made the "alarm" call, a repeated "ick-ick-ick," averaging from seven to ten syllables. Even a few days after the young had left the nest and could fly strongly, the female circled above, calling very concernedly as long as men were in the neighbourhood. Once, when the returning male caught sight of watchers in the nesting area, he joined his mate overhead and made an "alarm" call essentially like, though harsher, louder and slower than that of the female. This may be expressed by "yeck-yeck-yeck."

Occasionally the female did not rise immediately from the nest when the male approached with food, and he was heard to make a soft mewing sound to call her up. Often, when rising to receive the prey, and sometimes immediately before she left the ground, the female made the "food" call, a thin, long-drawn, whining, "psee—, psee—."

At the age of two to three weeks the young were able to scramble out of the nest when men approached. One, which had to be captured and brought back, struck savagely with its talons on being handled, and uttered an "angry" twittering sound.

A few days after the family had left the nest, one of the young birds, flying near the female, was heard to give a weak imitation of the "alarm" note that had just been uttered by the parent. As soon as they were strong on the wing the young would all rise from the ground and race upwards to meet the returning male with an excited chorus of "food" calls, which were in this case shriller and more hurried than that of the female.

The calls of Montagu's Harriers associated by the writers with food, alarm and anger, were later heard in only slightly modified form in those of Marsh-Harriers.

Nest Sanitation.

There were no food remains nor other debris in the nest itself when first discovered, and it was kept quite clean as long as the young were helpless and confined to it. The young birds projected their faeces clear of its edges, and these could be seen adhering to the surrounding *Juncus* stems to a height of six inches. During this period the female generally "prepared" food away from the nest before taking it to the chicks. Since no pellets were found at the nest, it is presumed that these and other refuse were carried away by the female.

Later, however, as the young became stronger and began to assume their feathers, they often strayed a few yards from the nest,

making down-strewn runways among the rushes. Faeces were now dropped indiscriminately on the nest and in the runways.

The female continued to feed the young until they could fly, and as long as she attended them, the nest was kept free of pellets and food remains. When all were able to fly well, they received their food direct from the male, remaining meanwhile close to the nesting area in the daytime and roosting at or near the nest at night. At this stage a few pellets were found at the nest.

The writers are much indebted to Professor F. W. R. Brambell, Mr. F. H. Jacob and Mr. W. Aspden for their kind help during the watching period, to Mr. B. R. Feaver for printing the photographs and to the Keeper of Ornithology at the British Museum for the identification of the feathers.

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pp. 56-70.

NOTES.

SONG OF FEMALE GREENFINCH.

As there is no mention in *The Handbook of British Birds* of a female Greenfinch (*Chloris ch. chloris*) singing, the following may be worthy of note. I have in my garden near Crawley, Sussex, a nest of this species in a cypress-tree, which hatched on May 21st, 1946. On that day, as I passed beneath the nest I heard a strange song, which, on examination, I found to come from the female Greenfinch standing over the young. The song was far more tuneful and far sweeter than the average Greenfinch's song and took the form of a slow, drawn-out warble, which quickened up into a twitter at the end. I can think of no song to compare it with. It was repeated three or four times and since then I have not heard it.

I. J. FERGUSON LEES.

COCK LINNET FEEDING HEN DURING INCUBATION.

WHILST studying the nesting habits of the Linnet (*Carduelis c. cannabina*) from a hide this year (1946), I observed that the cock regularly fed the hen with seeds during the whole period of incubation. The hen opened her bill, quivered her wings and called as the cock approached with food. There is no mention of this habit in *The Handbook*.

During the fledging period the same procedure was enacted and after a short time the food was given to the nestlings in a regurgitated form through the medium of the hen. Similar behaviour also occurs outside the nesting area on feeding-grounds used both by nesting birds and others without nests. JOHN N. MEAD.

CHAFFINCH SONG WITH TERMINAL CLICK IN ENGLAND.

IT is well known that over wide areas of Europe the Continental Chaffinch (*Fringilla c. cælebs*) often closes its song with a "click" added after a very slight pause.

On May 6th, 1946, in a Berkshire copse there was a Chaffinch singing in just this way; and the final note was always a perfect imitation of the "quick" of a Great Spotted Woodpecker (*Dryobates major anglicus*), though of course less loud. I listened long enough to hear the song end thus three times running.

This, together with an account of a similar occurrence in the *Report of the Oxford Ornithological Society* for 1944, seems to suggest that the Continental sub-species occasionally stays in England late enough to sing. M. J. WATERHOUSE.

[The occurrence of this song form in England is interesting, but we do not think it can be considered certain that birds of Continental origin are responsible. The Chaffinch is very prone to "dialects" and some notes or variants of notes are much more prevalent in some districts than others; it is possible that the song variant under discussion may occur exceptionally amongst birds of British stock, though regular in parts of the Continent.—E.DS.]

WHITE WAGTAIL ROOST.

DURING the summer of 1945, I had under observation a roost of White Wagtails (*Motacilla a. alba*) in the middle of the town of Perugia in Central Italy. The roost was first noticed on July 13th; it was still in occupation on August 7th, but was deserted by August 14th. The birds roosted every night in the upper branches of a medium-sized conifer in a small square surrounded by tall buildings. There were many other trees in the square, but the roost was always in this same conifer, which was a species with numerous short needles. On July 17th I watched the birds coming in to roost from a window of a house overlooking the tree, and counted 142 wagtails. The first few birds to arrive settled on the neighbouring rooftops before dropping down to the roost, but after the sun had gone below the hills they flew in direct from every direction, usually in twos or threes, but sometimes in larger parties up to fifteen. Perugia is situated on a hill and the square concerned is almost at the highest point. I had not seen any White Wagtails in the Perugia district before discovering the roost. P. F. HOLMES.

[The roosting habits of the White Wagtail do not appear to differ in any way from those of its British representative (*M. a. yarrellii*) and Mr. Holmes's account recalls the famous Pied Wagtail roost in Dublin referred to in *Brit. Birds*, Vol. xxiv, p. 364 and subsequently.—EDS.]

COURTSHIP FEEDING OF WILLOW-TIT.

ON April 13th, 1946, at Coulsdon, Surrey, two Willow-Tits (*Parus atricapillus kleinschmidti*) were seen in a low tangle of vegetation within four feet of the ground in a wood. The hen was sitting still most of the time and calling a rapid low rather harsh "chee-chee-chee. . . ." The male meanwhile was collecting food and was seen to visit the female four times in quick succession bearing one small green caterpillar each time and presenting this to the hen, who swallowed it, with rapidly vibrated wings. The last caterpillar was not swallowed immediately and had to be held down with her claw and eaten piecemeal.

The birds were definitely identified, the dull cap, wing patch and characteristic grating call being all noted.

G. BEVEN AND W. W. THOMSON.

[The only previous record, so far as we know, was published in the *Report of the Oxford Ornithological Society for 1944*, p. 13.—EDS.]

SUN-BATHING OF LONG-TAILED TIT AND HEDGE-SPARROW.

WITH reference to your Editorial note (*antea*, p. 152) the following extract from my notebook records an instance of sun-bathing in another Passerine species:—

"Richmond Park, Surrey, June 25th, 1940. Sunny, warm day. Family of eleven Long-tailed Tits (*Ægithalos caudatus rosaceus*) moved along trees in the Driftway. The nine juveniles with one

accord flew to the flattish densely-twigged crown of a hawthorn tree. There each bird rested on its breast, with wings extended and tail-feathers spread, in the sun. Now and again they all *rapidly vibrated* the separated and fanned tail-feathers. Once they stood up and preened themselves, simultaneously; then they sunned as before. The parents, which had been searching adjacent trees silently for two or three minutes, called, and the juveniles flew off to follow them."

W. L. COLYER.

THE note on sun-bathing in Passerine birds (*antea*, p. 152) prompts me to mention that during some warm sunshine on May 17th, 1945, at Gumley, Leicestershire, I watched a male Hedge-Sparrow (*Prunella modularis occidentalis*) preen vigorously while perched at the side of a bush. It then leant over to one side away from the sun and lifted up one wing, exposing the flanks and undersurface of the wing to the sunshine. It held this rather odd position quite motionless for a minute or more.

G. BEVEN.

YOUNG BIRDS RETURNING TO NEST.

FURTHER to the previous notes on this subject (*antea*, pp. 26, 152 and 178), I can give an instance of the same thing happening in the case of the Red-backed Shrike (*Lanius c. collurio*). On July 2nd, 1945, on Sway Common there were five young in a nest; on the 5th there were only three. On being ringed one left prematurely and got to the ground and I considered it too young to have got back although it was very active and the nest only about four feet from the ground. Yet on revisiting it in about one and a quarter hours I found that there were again three in the nest and the female was waiting to feed them with a small lizard.

EDWIN COHEN.

AFTER reading the recent notes under this heading I have had a instance of what I too think is a most unusual occurrence. In the early part of May, 1946, I had a nest of a Blackbird (*Turdus m. merula*) containing three young under observation. The young birds fledged in the usual manner and were not seen again until four days after they left the nest when I noticed one of them back again, sitting on the nest. It was not observed again, but from the evidence of copious fresh droppings in the nest, there seems a possibility that it was being used as a dormitory.

DAVID GUNSTON.

PRE-COITIONAL DISPLAY OF CHIFFCHAFF.

ON April 26th, 1946, at Bookham, Surrey, a hen Chiffchaff (*Phylloscopus c. collybita*) attracted attention, as she was jumping from twig to twig about 12 feet up in a tree, calling a high-pitched "siff-siff . . ." She was standing in a very upright attitude slowly flicking her wings in wide arcs with tail held down. Then the male was seen approaching, calling a high-pitched "Si-si-si . . .," with his wings fully expanded forming a graceful curve, almost a semicircle, with every feather displayed. The tail was depressed and fully

fanned, the greenish rump exposed, the head depressed. He leapt from branch to branch towards the female, not moving his wings from the position described. When he was about two feet from her, she flew towards him excitedly and coition occurred. The two separated and the whole display was repeated as before, but coition did not then follow. A few moments later the male broke into song.

G. BEVEN.

BLACKCAP IMITATING NOTES OF NUTHATCH.

ON April 22nd, 1946, at Hastings, I watched a cock Blackcap (*Sylvia a. atricapilla*) singing on a low branch among tall trees. It then flew to the upper part of a neighbouring tree. Immediately afterwards I heard a series of whistles which I took to be those of a Nuthatch (*Sitta europaea affinis*)—a regular inhabitant of the area. But, on looking up (with binoculars) to see the bird, I found that the notes came from a Blackcap, evidently the one that I had been watching. It was now high up in a tree and moving occasionally to a fresh perch. The whistling was repeated many times, and was mostly linked, without a pause, with a normal song-phrase; sometimes the whistling preceded, sometimes (but less often) it followed the song. I omitted to count the number of whistles in each series, but it was, I think, from six to eight. Eventually the bird flew some distance away, whence I could still faintly hear the same performance. I have never before heard any similar notes from a Blackcap. . . . A. A. WRIGHT.

[Mimicry is a regular feature of the song of the Blackcap, especially during the period of display. Eliot Howard (*Brit. Warblers*, Vol. I, p. 77) states that imitations of Nightingale and Garden-Warbler are most frequent and mentions also Starling, Linnet, Tree-Creeper, Great Tit, Long-tailed Tit, Sedge-Warbler, White-throat, Mistle-Thrush, Song-Thrush, Redstart, and the alarm-note of Blackbird. We have not heard or seen a reference to imitation of the Nuthatch.—EDS.]

DISPLAY OF SONG-THRUSH.

IN view of the brief notes on Song-Thrush display in *The Handbook* the following observation may be of interest.

At 4.25 p.m. (G.M.T.) on May 13th, 1946, I watched the following display at 50 yards, between two Song-Thrushes (*Turdus e. ericetorum*).

Presumed female was feeding when presumed male suddenly appeared slightly behind her and to her right, both being on the ground. Male approached to within a yard with a sidling motion, and circled her clockwise; she remained on the same spot, but moved so as to keep male always on her left and slightly behind. After one complete clockwise circle, during which female showed no visible signs of invitation such as wing shivering or tail depressing, male made one sudden hop and landed close to female an inch or two behind her and to her right, both facing in the same direction.

As he landed his tail was depressed to the ground and then flirted up quickly, while his head was held up almost vertically and his throat fully extended. In one second he mounted her, but before coition could be completed, a cat appeared, and both birds at once flew.

BERNARD F. HARVEY.

"INJURY-FEIGNING" OF BLACKBIRD.

"INJURY-FEIGNING" of the Blackbird (*Turdus m. merula*) is described in *The Handbook* as rare. It may be of interest therefore to describe an occasion when there was little doubt that such action by the cock saved the life of a young bird. On May 30th, 1940, at Coulsdon, Surrey, a young Blackbird was noticed fluttering rather feebly across a space between two shrubberies. A cat which had apparently been watching it, bounded after it and was close behind when the adult male suddenly appeared, went right down in front of the cat and fluttered as if injured, just above the ground a yard or so ahead. This drew the cat off most successfully, so that the youngster reached shelter. The cock then flew up on to a gate, and with raised tail and depressed wings kept up loud cries at the cat, which seemed somewhat intimidated; it twice turned back from visiting a bush apparently containing another young bird, and when it did reach it the cock swooped down at it to within an inch or so. The hen Blackbird was also present and showed considerable alarm.

G. BEVEN.

UNRECORDED NOTE OF GREEN WOODPECKER.

ON March 31st, 1946, at Hazelhurst, Sway, Hants, I saw two Green Woodpeckers (*Picus viridis pluvius*) together. These two birds flew across the lawn into the high branches of adjacent elms, making in flight what to me was quite a new noise. It could only be likened to the rubbing of a window-pane with a damp chamois-leather, but it was very rhythmical and rather fast. It seems doubtful whether this note corresponds to any of those described in *The Handbook*.

EDWIN COHEN.

[We do not know this note and it does not appear to correspond with any of the less familiar cries recorded by Walpole-Bond in *A History of Sussex Birds*, Vol. II, p. 178.—EDS.]

DISPLAY OF CUCKOO.

ON April 21st, 1946, at 8 a.m., I was in a field about two miles out of Evesham, when I heard a Cuckoo (*Cuculus c. canorus*). Shortly after my attention was attracted by a harsh panting sound which increased in volume. I then saw through field-glasses a Cuckoo perched facing along a telegraph-wire 70 yards away. It was displaying with its wings half spread and drooped down and the tail erect, showing very clearly the barred white under-parts of the wings and tail. The head was stretched forward. The tail rotated slowly in a vertical position. This display continued for

about one minute, the motion of the tail getting more vigorous. A second Cuckoo, presumably the female, who must have been in a tree near, then flew away, followed by the other.

This display differs in some points from that described in *The Handbook of British Birds*, so may be of some interest.

ROBERT S. WOOD.

TURTLE-DOVE WINTERING IN DEVONSHIRE.

ON January 9th, 1946, I observed a wintering Turtle-Dove (*Streptopelia t. turtur*). It was first noticed flying near, but slightly apart from, a flock of Lapwings in a raging gale of wind and rain on Stockland Hill, Devon, which is about 600 feet above sea-level. In flight I did not definitely see the white border to the tail, but I was motoring at the time and the visibility, owing to the weather conditions, was poor. When the bird settled it crouched head to wind with its tail depressed amongst the stubble and only the head and mantle clearly visible. I stopped the car some fifty yards from it and was able to examine it with good binoculars for about five minutes. The head and neck were ashy brown merging into deeper brown on the mantle. The bill was dark, tipped with yellow. If it had not been for an engagement I should have braved the weather and walked up to the bird, but I am quite certain of its identity, its small size, plumage and flight making identification easy. It seemed to me to be probably an immature bird. F. C. BUTTERS.

NESTING OF CURLEW IN BUCKINGHAMSHIRE.

IN May, 1946, I was informed that a pair of Curlew (*Numenius a. arquata*) had been seen in some fields near a public footpath on the Buckinghamshire-Oxfordshire border. On May 20th I visited the area with Mr. R. G. Frankum, who had first reported them. We saw both birds, but in spite of a prolonged search we could find no nest. On May 23rd I returned with my wife, and we soon found the nest, which contained four eggs. Unfortunately at some time in the following week the eggs were destroyed, probably by Crow or Magpie, and on May 30th there was only a fragment of shell in the nest and the remains of an unhatched egg close by. The Curlews were nowhere to be seen, but were found in a hayfield about half-a-mile away later in June. It is not known if they laid again.

The field in which the nest was situated is planted with willows *c.* 15 ft. high at 15 yds. x 15 yds., and the nest was about 7 yds. from the nearest. The parish of Kingsey, in which the field lies, was in Oxfordshire from 1894 till about 1936, when it was restored to Buckinghamshire. This is the first record of the Curlew nesting in Buckinghamshire. E. J. M. BUXTON.

FOOD-WASHING OF WHIMBREL AND DUNLIN.

WITH reference to the food washing habit of waders mentioned *antea* p. 184, the following note on the Whimbrel (*Numenius*

phæopus) may be of interest. On May 28th, 1939, at High Halstow, Kent, C. B. Ashby and I observed a bird searching the mud-flats for crabs. It walked about continually probing the mud and found several small crabs, an inch or so in diameter. Each time it picked up a crab it washed it in a small puddle of water nearby, and then in most cases, if not in all, broke off the limbs one by one. Finally the crab was crushed several times in the beak and then swallowed. Six small crabs were dealt with in this manner. A larger crab three inches or so across needed special care and it took longer to remove the legs, after which it was taken to a spot where the sand was harder and the shell broken by blows and some of the inside eaten, the rest being then swallowed whole with some slight difficulty! We could not tell whether the legs of the crab were eaten. As far as I can remember now the washing consisted of shaking the food several times from side to side under water. G. BEVEN.

I CAN trace one record of food washing by a wader in my notes as follows:—On August 5th, 1942, at Pwllheli about 150-200 Dunlin (*Calidris alpina*) were watched feeding on the mud in the harbour. One was seen to catch a fat worm (? lob-worm) nearly as long as himself and carry it several feet to a muddy pool where it was washed before being swallowed.

I was unable to see what food the other birds were eating since it was very small, but no more washing incidents were observed.

A. J. B. THOMPSON.

TEMMINCK'S STINT IN NORTHAMPTONSHIRE.

ON May 4th, 1946, we observed two very small waders near a flock of Dunlins on Northampton Sewage Farm and were able to identify them as Temminck's Stints (*Calidris temminckii*).

It was afternoon and the light was good; our position was with the light behind us and our distance from the birds about 30 yards, but subsequently I.J.F.L. was able to approach to within about 5-6 yards. We made independent notes, but both agreed on the colour of the legs, which was yellowish, and on size in relation to Dunlin, which was estimated at $5\frac{1}{2}$ inches.

The following description is based on our combined notes:—

Bill short and fine; colour blackish or brown-black. General colour of upper-parts, ash-brown with dark-brown markings; wings darker than the rest, primaries and greater coverts dark brown, rest of wing appearing "blotchy." One bird was darker and duller in appearance than the other (though otherwise similar), with a heavier, more blotched and less delicately marked effect. The under-parts of the lighter bird were white except for throat and upper breast, which were striated with ash-brown on a white background. The second bird had the breast a quite deep grey and the rest of the under-parts, though paler, appeared grey rather than white, the general effect being very drab in comparison with the other. Legs yellowish or yellowish-green in the lighter bird, apparently a dark greenish-brown in the other (I.J.F.L.), but not so well seen in this case.

The lighter bird, which got up first, was heard by I.J.F.L. to give the typical high-pitched, trilling call of Temminck's Stint. The other did not call. Both had white outer tail-feathers, but in the duller bird they appeared more greyish. Both "towered," as they rose.

R. E. BURTON AND I. J. FERGUSON LEES.

[I was at Northampton Sewage Farm on May 5th, when I saw what was clearly the lighter of the two birds described and confirmed the identification. The characteristic call and erratic flight were also noted. I was at the farm again on May 12th, but did not see any sign of it, but on May 19th with members of the Oxford Ornithological Society I again saw a Temminck's Stint, which, so far as I could judge with the observational handicap of heavy rain, might well have been the same individual. The description of the greyish under-parts of the second bird, which was not seen again after May 4th, is puzzling and difficult to account for except as an abnormality, since the evidence certainly points to its having been of the same species as its companion.—B.W.T.]

FEMALE RINGED PLOVER PERFORMING SCRAPE-CEREMONY.

ON June 17th, 1945, I witnessed the scrape-ceremony of the Ringed Plover (*Charadrius h. hiaticula*) as described in *The Handbook* (Vol. iv, p. 349), but performed in this case by the *female*. The male was adjacent, standing very erect, and often "marking time." There was one short combat as if the male wished to take over the scrape, but the female drove him away and continued with the scrape-ceremony. She then stood up and was immediately mounted by the male. Coition seemed to take place.

During the whole ceremony one or both birds (I could not determine which) uttered a low note with some carrying power sounding like "wet-wet-wet" or "wut-wut-wut." This note was certainly made by the male all the time that he remained mounted.

ROBERT F. RUTLEDGE.

[In the extremely thorough study of the breeding biology of the Ringed Plover by H. Laven which has recently become available in this country (*Journ. f. Orn.*, 1940, pp. 183-287), it is shown that in the stage just before laying the female, as well as the male, may perform the scrape-ceremony, with the male performing the "symbolic nest-relief" (*Handbook*, Vol. v, p. 281). "But then the rite is never so striking as when the male is relieved. When the male arrives the female stands up hesitating in the nest and the male creeps under her tail in the nest, but there is only a hint of tail-fanning by the female, she does not remain standing so long over her partner, and does not stretch her legs so much as the male".—EDS.]

LITTLE RINGED PLOVER IN KENT.

ON April 28th, 1946, a single Little Ringed Plover (*Charadrius dubius curonicus*) was flushed from a coastal marsh in Kent. The

bird was silent and the yellow orbital ring, flesh-coloured legs and absence of white wing-bar in flight made identification positive.

JAMES M. HARRISON.

STONE-CURLEW USING AUTUMN-TYPE DISPLAY IN SPRING.

IT seems generally agreed that the spring nuptial displays of the Stone-Curlew (*Burhinus æ. ædicnemus*) are of a more stereotyped and sedate nature than the frenzied communal displays which mark the autumn packing of these birds prior to departure. I have searched the literature, but cannot find any reference to a spring display which bears comparison with the violent and crazy careering indulged in during the autumn twilight, and which has been so ably described by Selous (*Bird Watching*, 1901, p. 12).

During this spring, I have been able, through the courtesy of Eric Hosking, to study and photograph a pair of Stone-Curlews, and from a hide placed at a nest of these birds, I witnessed the following behaviour. The date was May 24th, and during the afternoon, one of the pair (which I took to be the hen from the paler plumage and much paler yellow of bill and legs) had been incubating most of the time. About 4.45 p.m. (B.S.T.) a farm-labourer crossed the heath, and the hen bird left the nest with the usual crouched run. About 50 yards away she stopped and waited quietly until the man had disappeared. She then called once or twice with the normal "cour-lee" call, and the second bird (much darker in plumage and with brighter soft parts) appeared from a strip of bracken. The two birds stood side by side and quietly preened for ten minutes; then the hen made as though to return to the nest, the cock following a few yards behind. As she approached the nest however, she seemed suddenly to develop a desire not to incubate, and kept turning back. The cock bird became more and more agitated, and suddenly threw himself into a series of attitudes which were identical in every way with the autumn displays. He ran round the hen with raised and extended wings and then pitched violently about over the ground, first to one side and then the other, the effect being, as Selous has put it, "as if the bird were being blown about over the ground by a violent wind."

It was evident that this display, identical with some of the autumn-type posturing, arose from emotional agitation, and was not of nuptial origin. It throws into relief the remarkable, and as yet, little understood, communal displays of the Stone-Curlew. That these latter arise from an autumnal revival of sexual activity such as occurs with certain passerine birds seems unlikely, as the manifestations, being communal and non-aggressive, are contrary to what we expect from such a rerudescence. Selous's explanation (the only one so far advanced) that they arise from pleasurable anticipation of a night's feasting, falls distressingly short of his brilliant descriptions of the actual displays, and an opportunity exists here for some ornithologist, suitably placed, to make a detailed study of a unique

bird problem. For example, an examination of the state of the gonads of the Stone-Curlew in autumn might settle whether there were any sexual significance in the autumn displays. The relative rôles of male, female, and immature birds in the communal "dances" also need to be worked out, and observations on the intensity and diversity of the displays in relation to atmospheric conditions, time of day and year, and date of migration of the flocks, might all yield valuable results.

STUART SMITH.

GLAUCOUS GULLS IN N.E. SCOTLAND.

As *The Handbook* states that the Glaucous Gull (*Larus hyperboreus*), "very rarely occurs inland," the following notes may be of interest in showing that this bird is an occasional, if not fairly regular visitor to inland waters in N.E. Scotland at certain times of year.

For instance on the River Deveron alone, I have noted these gulls every winter since 1943, nine miles from the sea as the crow flies. In December, 1943, I saw three of these birds on different dates, an adult bird in December, 1944, an adult and immature bird together in February, 1945, and an adult and immature together flying down to a pool where large numbers of other gulls were gathered in February, 1946, the latter birds being ten miles from the sea and half a mile from the Deveron. The most interesting case, however, is that of an adult Glaucous Gull with a Great Black-backed Gull (*Larus marinus*), flying around and settling on the Don in Strathdon, 37 miles from the sea as the crow flies, but many more by following the Don valley.

Mr. Seton Gordon informs me that he has seen these gulls on the Park Water of the Dee, 11 miles from the sea, in January and February, feeding on dead "kelt" salmon, and usually in the company of Great Black-backed Gulls, and that these Glaucous Gulls do not roost on the river, but fly up and down from the sea in the morning and afternoon, as the Deveron birds probably do also.

ADAM WATSON.

UNUSUAL BEHAVIOUR OF WATER-RAIL.

AT about noon on April 27th, 1946, my mother, Mrs. A. M. Shaw, noticed an unusual bird on the gravel by the side of the drive at her house in Burford Road, Cirencester. She thought it was some kind of rail and called me to come and see it. The bird appeared quite tame and we approached to within 3 or 4 feet of it without it showing any sign of fear. It was by now busy foraging amongst the damp dead leaves under shrubs in the border. Its long red beak and slate-grey breast were very noticeable and established its identity as a Water-Rail (*Rallus aquaticus*) beyond question. It was in beautiful plumage and condition, but may have had a malformed or injured foot, as it appeared to stumble occasionally—we could not get a good view of its feet among the leaves and weeds. I tried to pick it up in order to place it in safer and more suitable surroundings, but it escaped under the fence and I could not follow it.

The river Churn and a fishpond lie within the secluded grounds of The Abbey, Cirencester, about 200 yards from my mother's house, but there are other houses and a main road between. I feel that the occurrence of a Water-Rail in a small town garden coupled with the complete absence of its usual shyness is worthy of placing on record.

M. O. MILNE-REDHEAD.

[Notwithstanding their normally secretive and skulking habits, Water-Rails may occasionally be seen feeding quite unconcernedly in the open, but our correspondent's experience in a town garden must certainly be very unusual, and the fact that the bird almost allowed itself to be caught suggests that there may have been something wrong with it in spite of appearances.—EDS.]

JACKDAW'S NEST WITH TEN EGGS.—Mr. B. A. B. Thompson sends us particulars of a nest of the Jackdaw (*Corvus monedula spermologus*) in a chimney at Shoreham, Sussex, which contained ten eggs on May 2nd, 1946. All the eggs were similar except three which had smaller blotches than the rest. The bird was later observed on the nest and no more eggs were laid after this date.

DRUMMING OF GREAT SPOTTED WOODPECKER IN SEPTEMBER.—We have previously noted (*antea*, p. 64) that reports received in recent seasons show that a slight recrudescence of drumming by the Great Spotted Woodpecker in autumn and early winter is not very rare. Mr. C. W. Towler now informs us that he heard and saw one drumming at Biggleswade, Bedfordshire, on September 21st, 1945. Our previous earliest autumn date was October 7th.

AUTUMN DRUMMING OF LESSER SPOTTED WOODPECKER.—Mr. E. W. Henly reports that on October 12th and 15th, 1945, he heard and saw a female Lesser Spotted Woodpecker (*Dryobates minor communis*) drumming at Porlock, Somerset, during unusually warm weather. Mr. H. G. Alexander's table in the *Handbook* gives the drumming period as from the end of January to mid-June, but as we pointed out in a previous comment on a December record (*antea*, Vol. xxxvii, p. 198) occasional drumming in September, October and November has been observed by others.

TURTLE-DOVE IN ABERDEENSHIRE.—Mr. Seton Gordon informs us that on May 30th, 1946, he had a good view of a Turtle-Dove (*Streptopelia t. turtur*) at Dinnet on the Dee.

MOORHEN ATTACKING RAT.—In connexion with previous notes on Moorhens (*Gallinula ch. chloropus*) charging Stoats in defence of their young (*antea*, Vol. xxxviii, pp. 80, 120), Mr. M. C. Tweedie sends us particulars of an incident near Rye in which a large Brown Rat which appeared to be trying to attack some half-grown young Pheasants in an orchard was itself attacked by a Moorhen, which came up at a fast run and without hesitation went for the animal. After a brief mix-up the rat bolted.

REVIEW.

Glossarium Europæ Avium. By Harriet I. Jørgensen and Cecil I. Blackburne. Einar Munksgaard, Copenhagen, 1941.

THIS invaluable little book, prepared before the war and published in Copenhagen in 1941, has as yet had little opportunity of demonstrating its usefulness, but cannot be too widely known amongst ornithologists as opportunities for normal travel and interchange between the nations of Europe become more general.

It provides a complete and most convenient guide to the names of all birds of regular occurrence in Europe in all the principal European languages, Czech, Danish, Dutch, English, Finnish, French, German, Hungarian, Icelandic, Italian, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish and Turkish. The first section lists the birds under their scientific names in alphabetical order, each with a number, and in a column under each species its names in all the above languages are given. There follows a series of indices of the current vernacular names in each language. The ornithologist confronted with a bird name in a foreign language has only to look it up in the index for that language to ascertain its number and find out in a moment the species to which the name refers. Or again, wishing to know the name of a given bird in any of the languages concerned he can find it with equal facility.

The names have been very carefully checked with the assistance of distinguished ornithologists of all the principal nationalities. We congratulate the compilers on an excellent piece of work, which meets a real need and one which we sincerely hope will increase from year to year.

LETTERS.

PARENT BIRDS PROBING AMONGST BROOD IN NEST.

To the Editors of BRITISH BIRDS.

SIRS.—The habit, referred to by several contributors to this and the previous volume of this journal (*antea*, Vol. xxxviii, pp. 206, 300, 360, Vol. xxxix, pp. 159, 160) in which parent birds of many species probe into the nest lining beneath the young, has been variously attributed to the eradication of parasitic insects; to a desire to shake up the lining, "air it," and prevent it becoming a caked mass; and to the provision of an inducement to defecate. Having seen this action a great many times at the nests of many species, I am convinced that the eradication of parasites is the major, if not the only, motive of the action. If the habit be closely observed, it will be seen that the adult bird first fidgets about beneath the young, and moves them somewhat from the area of lining which it is working. It then raises a piece of the lining in its beak, shakes it quickly, lets it return, and then studies the area carefully with a most intense attitude. In most instances, the bird will then pick up something from the lining and eat it, as may be seen by watching the beak, and especially the tongue, of the adult bird.

On May 20th of this year, I was in a hide placed before a Goldfinch's nest (*Carduelis c. britannica*) in a small cypress tree. The young were five days old, and the edge of the nest was fast becoming ringed with that mass of excrement which one associates with the nest of these birds. During several hours in the hide, I saw only one half-hearted attempt by the hen bird to swallow a small piece of faecal sac—for the rest, neither cock nor hen made any attempt at nest sanitation. But the hen bird was most assiduous in her efforts at "lining-shaking," which she did on an average once for every two visits to the nest. Her tongue flicked in and out removing many things from the lining which were too tiny to see. The interesting point is that this habit should be strongly developed in a bird which makes no serious attempt at nest sanitation beyond desultory swallowing of the faeces during the first few days after the hatch. Hence the instinct to search the nest lining appears to be derived from a source different from that which dictates the removal of the faecal sac.

STUART SMITH.

ROBIN FEEDING YOUNG SONG-THRUSHES.

To the Editors of BRITISH BIRDS.

SIRS.—In further reference to the Robin feeding a young Blackbird (*antea*, Vol. xxxviii, p. 355) and to Mr. D. J. May's allusion (*antea*, Vol. xxxix, p. 96) to Richard Kearton's recording of a Robin feeding young Song-Thrushes; this seems to be a matter of more frequent occurrence than is generally supposed:

Kearton told me of this experience, and on an occasion the following spring, I had just exposed my last plate on a brood of young thrushes, when, to my everlasting regret, I witnessed a similar event with no chance of obtaining a picture.

I set up my camera in the "hide" on several succeeding mornings, but was not given the opportunity I longed for.

ROBERT E. GROVES.

THE WINTER DISTRIBUTION OF THE GANNET
IN THE EASTERN MEDITERRANEAN.*To the Editors of BRITISH BIRDS.*

SIRS.—The published literature on the extent eastwards of the winter distribution of the Gannet (*Sula bassana*) from the British Isles appears to be limited and misleading. The impression is that the bird is only a rare visitor to the eastern portion of the Mediterranean, whereas my observations in wartime proved it no less widely distributed E. than W. of Malta, and off the Palestine coast it is a regular and much commoner winter visitor than ornithological histories suggest. This increase has probably been associated with the increase of British nesting colonies over 3,000 miles away, and observations we have recently collected in the Jerusalem Naturalists' Club (Bull., 17, p. 4) and in our new *Handlist of the Birds of Palestine*, p. 38, are therefore of interest to British ornithology.

From observations in wartime and 10-20 years previous, the Gannet is now obviously a fairly common winter visitor to the Palestine coast. The earliest record is November 18th and the latest April 21st. In Haifa Bay Dr. W. K. Bigger tells me he has frequently seen ten or more together and once he saw 50 together. An old male bird I saw in the extensive collection of my friend Dr. Walter Moses was obtained on April 21st, 1937, at the Wadi Malit, near Nathanya; a second adult male he obtained at Tel Aviv on January 28th, 1939, I have seen in the Aharoni collection in the University of Jerusalem. In 1945 and 1946, Mr. John Davison of the British Institute in Tel Aviv sent me the following observations: 1945.—January 13th, at least 10 up to half a mile off Tel Aviv, diving from 50 feet or over; January 14th, 10-12 Gannets same distance off Bat Yam (S. of Jaffa); some sooty coloured birds, probably immatures; January 27th, Gannets again, Bat Yam; twice saw two sooty birds flying with a mature bird; no fishing observed; January 28th, Bat Yam, Gannets but still no fishing; February 13th, Tel Aviv, wind S.W. and fresh to strong; Gannets "riding" on the wind; high diving birds following each other in rapid succession; March 3rd, Jaffa, one Gannet flying northward. 1946.—January 16th, one Gannet seen diving at 200 yards when trawling with the "Zevulum," 5.30 p.m.; two probables seen earlier; January 28th, five Gannets circling near Tel Aviv port; two observed diving; February 4th/5th, 10-12 Gannets between Jaffa and Tel Aviv.

When warm days followed these birds were not seen from the shore. Given a few days of steady N. wind and the Gannets appear; they disappear with warm offshore winds. S.W. storms keep them closer inshore. They are rarely seen on the water; there is no evidence that they have ever settled on land. The occurrence of so many adult birds is also interesting. They do not appear to show the same regularity in the N.E. Mediterranean, because the species is not included in Wilson's recent *Check List of the Birds of Cyprus* (Middle East Biological Scheme publication) nor has it been observed on the Lebanon coast at Beirut.

ERIC HARDY,

Capt. R. Signals,
Secty., Jerusalem Naturalists' Club.

NOTICE TO CONTRIBUTORS.

Contributors are asked to observe the following points, attention to which saves the waste of much editorial time on trivial alterations.

MSS. if not typed should be clearly written. Authors of papers, especially those containing systematic lists, lists of references, tables, etc., should consult previous papers on similar lines in *British Birds* as a guide to general presentation and set-out, including use of particular type, stops, and other conventions, such as date following the month (January 1st, etc., not 1st January), names of books and journals in italics, not inverted commas, and so on. Capital initial letters are to be used for proper names of definite species, but not for names used in a general sense or covering more than one species : thus "Great Tit," but "flocks of tits." [In systematic lists the whole name should be in capitals.] The scientific name (underlined in MS. to indicate italics) follows the English name in brackets without any intervening stop. Scientific nomenclature follows *The Handbook of British Birds* or H. F. Witherby's *Check-List of British Birds* based on this. When the subspecific name (if this is used) repeats the specific name the initial letter only should be used for the latter; otherwise the whole name should be given in full : thus "*Parus m. major*," but "*Parus major newtoni*."

Notes should be drawn up in as nearly as possible the exact form in which they will be printed, with signature in BLOCK CAPITALS. Though suitable headings and scientific names can be added by the Editor, if necessary, they should be inserted by authors as far as possible. Communications should always be as concise as possible, though reasonable detail can be given where this is important. Notes or records of subsidiary importance may be abbreviated or otherwise modified by the Editor for inclusion in the section of "Short Notes." Maps or graphs must be neatly and boldly drawn in Indian ink, with due allowance for reduction when necessary.

Notes and papers for publication and other communications of strictly editorial nature can be addressed direct to B. W. Tucker, 9, Marston Ferry Road, Oxford. Enquiries or requests for information not immediately related to material for publication must be accompanied by a stamped and addressed envelope.

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BRITISH BIRDS

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BERNARD W. TUCKER, M.A., F.Z.S., M.B.O.U.

ASSISTED BY

NORMAN F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

AND A. W. BOYD, M.C., M.A., F.Z.S., M.B.O.U.

CONTENTS OF NUMBER 9, VOL. XXXIX., SEPTEMBER 2, 1946.

	PAGE
Do juvenile Birds survive less well than adults? By David Lack	258
Some further Notes from the North Atlantic. By E. M. Nicholson	265
Studies of some species rarely photographed. VI. The Griffon Vulture. Photographed by R. Atkinson and George Yeates	275
Notes :—	
Sun-bathing by birds (Dr. J. M. Harrison)	276
Golden Oriole in Lancashire in June (P. A. Clancey)	276
Greenfinch adapting Chaffinch's nest (I. J. Ferguson Lees) ...	276
Chaffinch's nest high in trees (Lt.-Col. B. H. Ryves)	277
Status of the Corn-Bunting in Essex (T. Bispham)	277
Rustic Bunting on Fair Isle (P. A. D. Hollom)	278
Siting of Crested Larks' nests (Bertram M. A. Chappell) ...	278
Sky-Larks nesting in artificial depressions (Bertram M. A. Chappell)	278
Woodchat Shrike in Kent (Eric Gillham)	279
Irregular laying of Spotted Flycatcher (I. J. Ferguson Lees) ...	279
Note of Willow-Warbler (R. H. Brown)	279
Courtship feeding of Willow-Warbler (G. F. Mees)	280
Late Sedge-Warbler in Devon (R. G. Adams)	280
Display of Blackbird (Adam Watson)	280
Varieties of the British Robin (P. A. Clancey)	281
Display of Sand-Martin (Adam Watson)	282
Kestrel taking Redwing (F. J. Holroyde)	282
Sparrow-Hawk in Outer Hebrides (I. J. Ferguson Lees) ...	282
Pochard breeding in Warwickshire (C. A. Norris)	282
Actions of Long-tailed Duck under water (R. G. Adams) ...	283
Turtle-Dove nesting in Scotland (Major the Hon. H. Douglas-Home)	283
Wing-clapping of Turtle-Dove (Miss E. M. Barraud)	284
Unusual combination of migrants in London area (R. H. Ryall and T. Bispham)	284
Movements of Bar-tailed Godwits on West coast of Scotland (Comdr. G. E. Hughes-Onslow)	284
Wood-Sandpiper and other waders in Warwickshire (R. W. M. Lee)	285
Feeding habits of Redshank and Black-headed Gull (J. A. G. Barnes)	285
Ground display of Kentish Plover (John H. Barrett)	286
Arctic Skua in Hertfordshire (A. C. Bruce)	287
Blackcock Display (David Lack)	287
Quail calling in flight (A. J. Harthan)	288
Short Notes :—	
Great Spotted Woodpecker attacking nesting-box containing young Blue Tits. Exceptional passage of Black Terns in May	288
Letter :—	
Oystercatchers marked with coloured rings (E. J. M. Buxton)	288

DO JUVENILE BIRDS SURVIVE LESS WELL THAN ADULTS?*

BY

DAVID LACK.

Edward Grey Institute of Field Ornithology, Oxford.

FARNER (1945) has estimated the age and survival of the American Robin (*Turdus migratorius*) from ringing (banding) returns, by the method used by the present writer for various British species (Lack, 1943). Farner's conclusions agree closely with mine except in one important particular. He finds no difference in the survival of first-year as compared with older birds, whereas I claim that first-year birds have a greater proportional mortality than older birds, and a rather lower expectation of further life. Farner calculates his mortality figures from the first Nov. 1st of life, whereas mine were calculated from the first Aug. 1st of life. He claims that the greater apparent mortality in the first year, shown by my figures but not his, is due simply to the difference in the date from which the calculations were started. He suggests further that the increased mortality is only apparent, not genuine, and due to the fact that "the rate of recovery of first year birds that die near the nest banding stations is greater than the rate of recovery of those dying elsewhere." (p. 58).

To test out Farner's suggestion, the returns under the *British Birds Marking Scheme* have been re-analysed for the Blackbird (*Turdus merula*), Song-Thrush (*Turdus ericetorum*), Starling (*Sturnus vulgaris*) and Lapwing (*Vanellus vanellus*). All recoveries of individuals ringed as young before 1935 are included, and no others. The totals available are shown in Table I.

TABLE I. TOTAL OF INDIVIDUALS RECOVERED.

	After first Aug. 1st of life	After first Nov. 1st of life	After first Jan. 1st of life	After Second Aug. 1st of life	After Second Jan. 1st of life
Blackbird (<i>Turdus merula</i>)	345	282	258	159	
Song-Thrush (<i>Turdus ericetorum</i>)	360	294	262	168	
Starling (<i>Sturnus vulgaris</i>)	192	171	154	100	
Lapwing (<i>Vanellus vanellus</i>)	585	529	466	368	

NOTE.—In the above and later tables, the figures differ slightly from those given previously (Lack, 1943), as for the latter the data from the Aberdeen University Marking Scheme were included with the *British Birds* data.

*Publication of British Trust for Ornithology.

The first stage was to re-analyse the British data by Farner's method, i.e., calculating survival from the first Nov. 1st of life. To compare with this, survival is also shown when calculated from the first Aug. 1st of life, from the first Jan. 1st. of life, and from the second Aug. 1st of life. The last gives a figure for the survival of fully adult birds.

TABLE II. MORTALITY IN NEXT YEAR OF LIFE, CALCULATED FROM VARIOUS DATES.

		<i>From first</i>	<i>From first</i>	<i>From first</i>	<i>From second</i>
		<i>Aug. 1st</i>	<i>Nov. 1st</i>	<i>Jan. 1st</i>	<i>Aug. 1st</i>
Blackbird	...	54%	45%	40%	40%
Song-Thrush	...	53%	46%	45%	40%
Starling	...	48%	44%	44%	48%
Lapwing	...	37%	33%	30%	33%

Table II shows that Farner is correct in stating that, when the mortality is calculated from the first Nov. 1st of life (column ii) first-year birds show little or no worse survival than fully adult birds (column iv). Actually, agreement is yet closer when the calculation is made from the first Jan. 1st of life (column iii). It is therefore recommended that, in future studies of this type, mortality should be calculated from the first Jan. 1st of life. Accordingly, new figures are given below for the expectation of further life of the birds concerned, to replace those published previously (Lack, 1943). The calculation of adult survival from the first Jan. 1st of life is preferable to a calculation from the second Aug. 1st of life, simply because a greater total of recovered individuals is available.

TABLE III. EXPECTATION OF FURTHER LIFE.

		<i>On first</i>	<i>On first</i>	<i>On first</i>
		<i>Aug. 1st</i>	<i>Jan. 1st</i>	<i>Aug. 1st</i>
		<i>of life.</i>	<i>of life.</i>	<i>of life.</i>
Blackbird ...	...	1.6 years	1.9 years	1.9 years
Song-Thrush ...	...	1.45 years	1.6 years	1.55 years
Starling ...	...	1.5 years	1.6 years	1.5 years
Lapwing ...	...	2.4 years	2.6 years	2.55 years

The high recovery rate of first-year birds previous to the first January of life is best shown by analysing separately the recoveries of those individuals of all ages dying in the months August to December inclusive. The method of calculation is exactly the same as that used for calculating the full annual mortality, except that the individuals of all ages dying in the months from January to July are omitted. The results set out in Table IV, show that, in all four species, the proportion of first-year birds among the Aug.-Dec. recoveries is much higher than the annual mortality among adult birds.

TABLE IV. MORTALITY IN FIRST AUG.-DEC. OF LIFE.

		Percentage of Aug.-Dec. recoveries which were in first year of life.	Annual adult mortality (as in column (iii) of Table II).
Blackbird	...	74%	40%
Song-Thrush	...	65%	45%
Starling	...	56%	44%
Lapwing	...	44%	30%

NOTE.—For totals available, see Table V.

It remains to determine whether the disproportionately high rate of recovery of first-year individuals before the first January of life represents a genuinely higher mortality—or whether, as Farner suggests, it is due to the fact that, in this period, a greater proportion of the birds are in the neighbourhood of the ringing stations, where it seems possible that a greater proportion of those dying will be found and reported. To test for these alternatives, the recoveries were divided into three groups :

- (i) Those reported by or through the ringer (always near where ringed),
- (ii) Those reported near where ringed, but not by or through the ringer,
- (iii) Those reported away from where ringed—the place of recovery being a different town or village from the place where ringed.

Of these three groups, the first might represent a biased sample, as the ringer probably keeps a sharper look-out for dead birds than the ordinary person, and also interests his neighbours. The third group is presumably uninfluenced by the ringer's activities, and so represents an unbiased sample. The second group is doubtfully biased. In Table VI, the mortality in the first Aug-Dec. of life is calculated separately for these three groups, while Table V shows the totals involved.

TABLE V. NO. OF INDIVIDUALS FOUND DEAD AUG.-DEC. (ALL AGES).

		By or through ringer.	Near where ringed, but not by ringer.	Away from where ringed.	Total.
Blackbird	...	35	55	48	138
Song-Thrush	...	21	32	97	150
Starling	...	14	11	43	68
Lapwing	...	13	20	237	270

TABLE VI. PERCENTAGE OF AUG.-DEC. RECOVERIES IN FIRST YEAR OF LIFE.

	<i>Of those found by or through ringer.</i>	<i>Of those found near where ringed but not by ringer.</i>	<i>Of those found away from where ringed.</i>	<i>Of all recoveries (as in Table IV).</i>
Blackbird ...	69%	84%	67%	74%
Song-Thrush...	67%	63%	66%	65%
Starling ...	43%	55%	60%	56%
Lapwing ...	77%	60%	41%	44%

Table V shows that the totals involved are rather small. However it seems clear from Table VI that for Blackbird, Song-Thrush and Starling, the apparent first-year mortality is no greater when based on (i), birds found by the ringer, than it is when based on (iii), birds recovered away from where ringed. This is contrary to Farner's conclusion, and means that the disproportionately large number of first-year recoveries in these species represents a genuinely higher mortality during the first few months of life.

The Lapwing differs from the three passerine species in that a disproportionately large number of first-year recoveries is included among those found by the ringer. However in the Lapwing, as shown in Table V, only an extremely small proportion of the total recoveries was found by the ringer. When the analysis is based solely on those individuals found away from where ringed, there is still a conspicuously greater apparent mortality among first-year than among older individuals. Hence for this species, as for the others, the disproportionately high mortality in the first year must be a genuine one, and not due to bias in the recovered sample. Actually, a sufficient number of Lapwings has been recovered to analyse the mortality month by month, as set out in Table VII. For this purpose, only those individuals found away from where ringed have been utilized.

TABLE VII. PROPORTION OF LAPWINGS DYING IN EACH MONTH WHICH WERE FOUND DEAD IN THEIR FIRST YEAR OF LIFE.

	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Jan.</i>	<i>Feb.</i>	<i>Jan. 1st</i>	<i>Annual Figure from</i>
Total No. found									
dead	20	25	29	51	112	115	78	466	
Proportion in first year	... 65%	48%	45%	43%	33%	30%	38%	30%	

Table VII shows that the disproportionately high mortality among juvenile Lapwings is particularly high in August, is less marked in September, October and November, and by December is close to the figure for the annual mortality among adult individuals. This progressive lessening of the disproportion presumably indicates that the juvenile birds are gradually learning to avoid dangers as they grow older. A parallel analysis of the Blackbird, Song-Thrush and Starling returns shows a generally similar effect, but the totals are too small for the figures to have great significance, so they have been transferred to Appendix II.

The remaining species discussed by Lack (1943) have not been re-analysed. For the Robin (*Erythacus rubecula*), too few returns were available for significant results on the point in dispute. In the Black-headed Gull (*Larus ridibundus*), as shown previously, the recoveries of shot birds included a significantly higher proportion of first-year individuals than occurred among those not reported as shot. This constitutes a specific example of juvenile birds gradually learning by experience. However the data for those individuals not reported as shot were not re-analysed here, because these individuals doubtless included a proportion which were in fact shot, though this was not recorded by the person who recovered the ring. Hence the recovered sample was probably biased as to age. The same applies to the recovered sample of Lesser Black-backed Gulls (*Larus fuscus graellsii*) and Cormorants (*Phalacrocorax carbo*), and perhaps to the Woodcock (*Scolopax rusticola*).

Kraak, Rinkel and Hoogerheide (1940) found that, for Lapwings in Europe, the first-year mortality is similar to that of later years, but as they calculated survival from the first Jan. 1st of life, their result is in agreement with the present paper. As pointed out before (Lack, 1943), the Lapwing has a heavier annual mortality in Europe as a whole than it does in England, whereas in the Starling the survival of Dutch birds agrees closely with the English figure. Results for other species would be of interest.

In conclusion, two further Dutch papers may be mentioned. Ruiter (1941) found that, on the average, 38% of nesting Redstarts (*Phoenicurus phoenicurus*) returned in the following year to his experimental area. Assuming that none of the missing birds were still alive, this gives an annual mortality of 62%, exactly the same figure as that I have obtained from ringing returns for the closely related Robin (Lack, 1943). Adult Redstart and Robin therefore have an expectation of further life of only 1.1 years, a lower figure than for any other species so far analysed. Ruiter calculated that 79% of fledged young Redstarts die before breeding, but this figure is not exactly comparable with the estimates of first-year mortality in the present paper, as it is taken from the time that the fledglings leave the nest.

In his study of the Cormorant (*Phalacrocorax carbo*), Kortlandt (1942) finds that first-year birds have a higher mortality than second-year birds, which in turn have a higher mortality than third-year

individuals, which in turn survive less well than adults. From this it would seem that Cormorants learn to avoid life's dangers more slowly than do the British species analysed in the present paper. Kortlandt's calculations were complicated by the fact that the Dutch population was increasing at the rate of 10% per annum. He was also able to show that the apparent losses among ringed birds were greater than for the population as a whole, either because the rings caused extra mortality or because a proportion of the rings dropped off as time went on; the latter factor was probably responsible for most of the difference. This is also the probable explanation for the impossibly high apparent mortality which I found among British ringed Cormorants (Lack, 1943).

SUMMARY.

1. Using the ringing recoveries of wild birds, the annual mortality calculated from the first Jan. 1st of life is closely similar to that calculated from the second Aug. 1st of life. It is therefore recommended that, in future, Jan. 1st should be used as the date from which to calculate the survival of birds on the basis of ringing returns.

2. The first-year recoveries in the first Aug.-Dec. of life are disproportionately high. This is not due to bias in the recovered sample, e.g. to too many young individuals being recovered in the district of the ringer. It reflects a genuinely higher mortality among juvenile than adult birds, presumably due to inexperience. In the Lapwing, the survival figures show a progressive improvement in successive months.

3. In Blackbird, Song-Thrush and Starling, the recoveries by the ringer and the recoveries away from where ringed have a similar age distribution. In the Lapwing, a greater proportion of young birds are found by the ringer than are found away from where ringed, but those found by the ringer constitute only a very small proportion of the total number found.

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APPENDIX I.

NO. OF INDIVIDUALS RECOVERED IN EACH YEAR OF LIFE, STARTING FROM FIRST JAN. 1ST OF LIFE.

	<i>Blackbird</i>	<i>Song-Thrush</i>	<i>Starling</i>	<i>Lapwing</i>
1st year	103	118	68	141
2nd „	63	58	42	109
3rd „	45	50	21	70
4th „	20	24	16	42
5th „	9	3	3	40
6th „	7	5	3	19
7th „	5	3	—	19
8th „	2	1	1	7
9th „	3	—	—	6
10th „	1	—	—	5
11th „	—	—	—	6
12th „	—	—	—	1
13th „	—	—	—	—
14th „	—	—	—	1
TOTAL	258	262	154	466

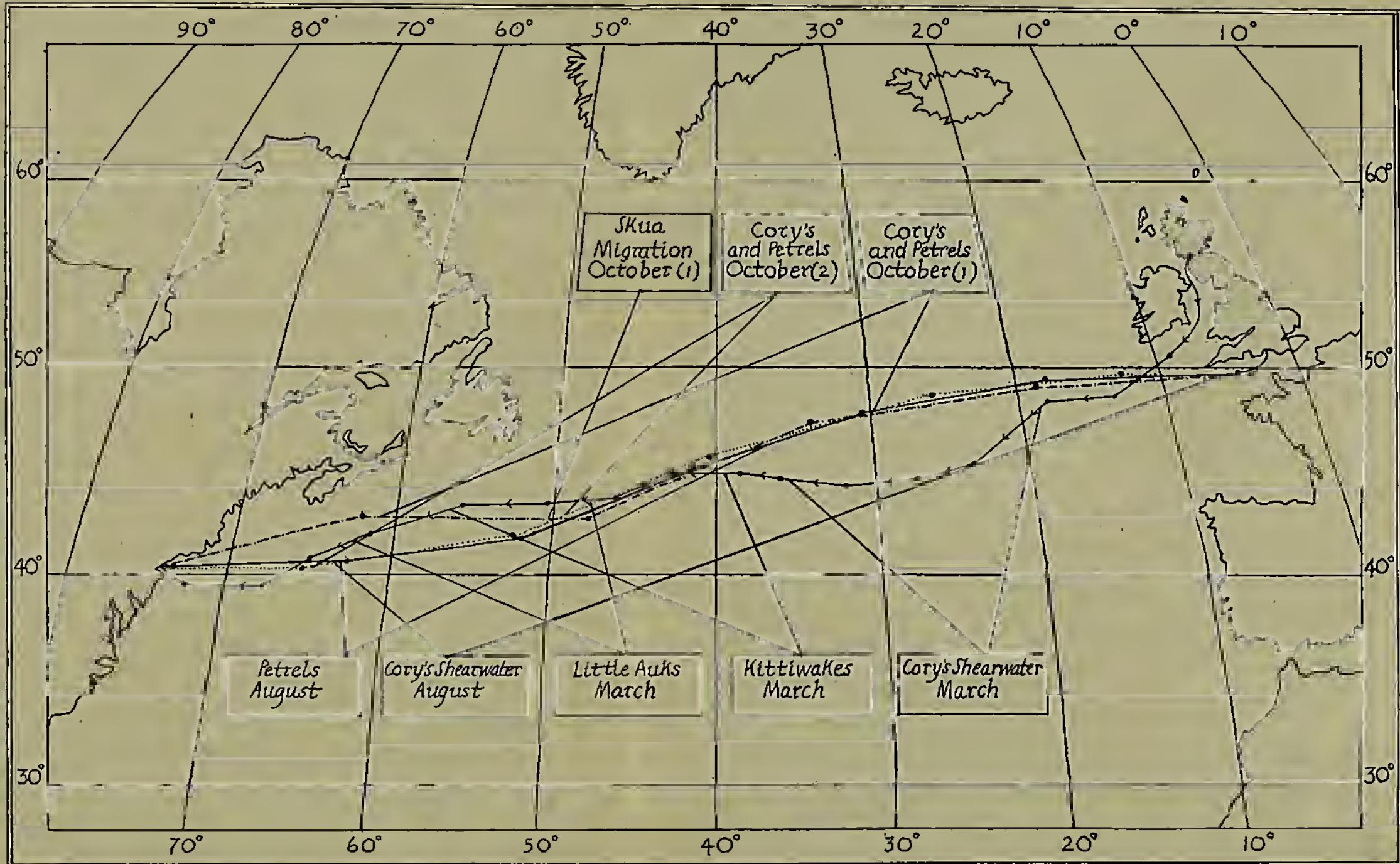
APPENDIX II.

PROPORTION DYING IN EACH MONTH WHICH WERE FOUND DEAD IN THEIR FIRST YEAR OF LIFE. (*cf.* TABLE VII IN THE TEXT).

	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Jan.</i>	<i>Feb.</i>
Blackbird ...	... 85%	68%	74%	69%	68%	50%	32%
Song-Thrush ...	... 67%	81%	70%	65%	44%	51%	42%
Starling ...	... 70%	58%	58%	53%	47%	44%	32%

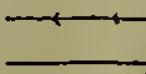
TOTALS FOUND DEAD.

Blackbird ...	...	40	22	19	29	28	30	34
Song-Thrush ...	...	45	27	20	31	27	43	34
Starling ...	...	10	12	12	17	17	18	19



Sketch Chart to illustrate
SOME FURTHER BIRD-NOTES FROM THE NORTH ATLANTIC

Westbound mid-March
Eastbound late August



Noon position .

Eastbound mid October (1)
Eastbound late October (2)



SOME FURTHER NOTES FROM THE NORTH ATLANTIC

BY

E. M. NICHOLSON.

(with chart).

SINCE the publication in 1928 of the writer's "Bird Notes from the North Atlantic" (*Brit. Birds*, Vol. xxii, pp. 122-133) and of "An Ornithological Transect of the North Atlantic" (*Brit. Birds*, Vol. xxiv, pp. 266-274), much has been done to clarify the distribution of North Atlantic birds, notably in V. C. Wynne-Edwards's comprehensive paper "On the Habits and Distribution of Birds in the North Atlantic" (*Proc. Boston Society for Natural History*, Vol. 40, pp. 233-346), which includes a full bibliography. There are, however, still serious gaps and obscurities. These notes may assist in filling one or two of them. They are based on a series of transatlantic surface crossings between Great Britain (Clyde and Southampton) and American North Atlantic Ports (New York, Boston, Halifax) by the R.M.S. *Queen Elizabeth* and the R.M.S. *Queen Mary*, but the majority of these crossings were made in war conditions of blackout, heavy security restrictions, and defence measures, which rendered all but the most casual observation impossible. Since the War a crossing on the *Queen Elizabeth* from New York to Southampton during the autumn migration has permitted fairly continuous watching with field-glasses and has yielded useful results. On this voyage Miss J. H. Lidderdale was responsible for an important share of the observation carried out and I am also indebted to her for the chart which illustrates this paper. Sir Cyril Hurcomb (who made the same crossing a week later in the *Queen Mary*) has kindly provided a valuable supplementary account. Records from such large and fast ships cannot, however, be comparable with those obtained from vessels moving at more moderate speed. When cruising at 25-30 knots even a light headwind is enough to prevent any but the fastest birds from coming up in the wake, and only birds flying parallel with the ship's course can be observed for any length of time. Specific identification of small birds, such as storm-petrels, seen from a deck some 80 ft. above them at a speed of say 28 knots, is also quite a problem (especially when the observation post is exposed to the very stiff breeze). Some of the obvious shortcomings of these notes have been made good by Mr. H. G. Alexander, who has most generously made available for this paper two 1945 transects on similar courses made from ships of more reasonable size and speed.

All times given in this paper are ship's time, corrected for position, and all positions are the *noon* positions of the ship on the day in question.

1ST AND 2ND WESTBOUND VOYAGES, QUEEN ELIZABETH, JANUARY 1943 and JANUARY, 1944.

These yielded very little, conditions being so bad that no serious observation was practicable, even during the very limited daylight hours afforded along the abnormal northerly routes adopted owing to war dangers. On the second of these voyages, however, Fulmar Petrels (*Fulmarus g. glacialis*) were seen in numbers from East Greenland waters (south of Denmark Strait) down to Newfoundland Bank, the blue phase predominating off Greenland. Some probable Brünnich's Guillemots (*Uria lomvia*) and some storm-petrels of uncertain species were seen in the Newfoundland Bank region.

3RD WESTBOUND VOYAGE, QUEEN MARY, SEPTEMBER, 1944.

This voyage was on a much more southerly course from the Clyde through the Irish Channel and near the Azores to Halifax, but it was fully occupied in preparations for the Quebec Conference, and the only observations were some large shearwaters in the area of Sable Island over 100 miles off Halifax, Nova Scotia, most of which were undoubtedly Cory's* (*Puffinus kuhlii* subsp.?), but one was so dark above and below that it can only have been a Sooty Shearwater (*Puffinus griseus*).

4TH WESTBOUND VOYAGE, QUEEN ELIZABETH, OCTOBER-NOVEMBER 1944.

This voyage followed much the same course as the last, but ended at Boston, Mass. Leaving the Clyde on October 28th, we dropped down through the Irish Channel on the morning of the 29th ($51^{\circ}48'N$, $6^{\circ}41'W$), being visited by a cock Chaffinch (*Fringilla cælebs*) subsp.?) which came down on the after-deck, and by a party of 12-20 Starlings (*Sturnus vulgaris* subsp.?) which followed all day, usually flying mast-high abreast or astern of the ship in a close body.

On the 30th ($45^{\circ}15'N$, $18^{\circ}44'W$), although we reached a distance of some 600 miles from Ireland, we were still accompanied by four or five of the Starlings up to at least 6 p.m. ship's time. It was curious to see them flying off at times as much as half-a-mile from the ship in this oceanic habitat.

On the 31st ($41^{\circ}04'N$, $32^{\circ}08'W$) only a single Starling was seen (and that not after 2.30 p.m.) some 1,200 miles from Ireland. It was observed in the morning going down to feed on bread and water provided by a gun's crew on the sports deck. No more were seen, although a passenger, Mr. T. Baird, informed me that on a previous voyage by the same ship two years earlier some came over all the way to New York, living in the enclosed promenade deck. On the 31st also, we began to see at intervals large shearwaters which (in the absence of field-glasses) could not be definitely identified, but both from their appearance and position (spread out from the Azores to New England waters) were probably Cory's.

* Called Atlantic Shearwater in *The Handbook of British Birds*.

On November 1st ($39^{\circ}48'N$, $46^{\circ}34'W$) I had reports of storm-petrels (sp.?), but saw none myself. There were more shearwaters.

On November 2nd ($39^{\circ}40'N$, $60^{\circ}45'W$) I saw a storm-petrel—probably Wilson's (*Oceanites oceanicus*)—and more of the shearwaters. From subsequent experience it seems certain that many must have been missed in the prevailing conditions. Unfortunately, no notes were kept about Kittiwakes (*Rissa tridactyla*) or Fulmars, on this or previous war-time voyages, with the one exception already mentioned.

5TH WESTBOUND VOYAGE, MID-MARCH, 1945.

This and the next following transect were carried out by Mr. H. G. Alexander. I have omitted a number of notes, some of which have already been summarized (*antea*, Vol. xxxix, p. 83) relating to inshore and land-birds seen in or near British coastal waters.

H.G.A. left the Clyde in convoy on March 8th and passed through the Irish Sea. On the 10th ($50^{\circ}30'N$, $9^{\circ}10'W$) six Gannets (*Sula bassana*) were noted and several Kittiwakes in the afternoon, besides a number of other gulls and auks. On the 11th ($48^{\circ}44'N$, $13^{\circ}39'W$) no birds were seen and on the 12th ($48^{\circ}10'N$, $18^{\circ}13'W$) only four Cory's Shearwaters and a Puffin (*Fratercula arctica*) all in the afternoon. On the 13th ($45^{\circ}15'N$, $23^{\circ}20'W$) three Puffins were seen before 8.30 a.m., a petrel (sp.?) at 11 a.m. and one definite, and two or three doubtful, Fork-tailed Petrels (*Oceanodroma leucorrhoea*) in the afternoon, while the only two Cory's Shearwaters were seen as late as 6.45 p.m. Small numbers of this last species only were seen throughout the 14th ($44^{\circ}30'N$, $27^{\circ}45'W$) in Azorean waters, and no birds at all on the 15th ($44^{\circ}14'N$, $32^{\circ}0'W$) when the weather, hitherto generally good, began breaking. March 16th ($44^{\circ}38'N$, $36^{\circ}10'W$) was stormy, and yielded only one bird, a probable Cory's Shearwater, at 10 a.m. On the 17th ($44^{\circ}43'N$, $38^{\circ}35'W$) nothing was seen till 4.30 p.m. when six Kittiwakes were seen flying west and north-west, followed 25 minutes later by three more. Two were juveniles, the rest adults. This movement of Kittiwakes in parties mostly going north-west continued the next day ($44^{\circ}43'N$, $42^{\circ}20'W$), the only other bird seen being a shearwater (? Audubon's, *Puffinus l'herminieri*) at 4 p.m.

On March 19th ($43^{\circ}35'N$, $46^{\circ}8'W$) the Newfoundland Bank association was entered, parties of Kittiwakes in the late morning being succeeded after 1.15 p.m. by crowds of Brünnich's Guillemots and a few Common Guillemots (*Uria a. aalge*). Between 6.15 and 7.30 p.m. H.G.A. noted several more Kittiwakes and Brünnich's Guillemots, one Puffin, and over 40 Little Auks (*Alle alle*) in ones, twos and small parties. This day was stormy, but the 20th ($43^{\circ}16'N$, $50^{\circ}15'W$) was mostly fine, and yielded many Brünnich's Guillemots in the morning (gradually petering out in the afternoon); Kittiwakes in numbers all day (about half in immature plumage as on the previous day), including two large parties resting on the water and small ones flying west, north or north-west;

Great Black-backed Gulls (*Larus marinus*) at intervals all day; two or three Fulmars before 8.30 a.m. only; one Puffin at 9.45 a.m.; and five Little Auks. On the 21st ($43^{\circ}10'N$, $55^{\circ}46'W$) by 8.30 a.m. H.G.A. had seen c.10 Kittiwakes, 22 Little Auks, one Great Black-backed Gull, and one Brünnich's Guillemot. Other counts after midday showed birdless intervals of 15-20 minutes alternating with further patches of Kittiwakes and Little Auks, plus one more Great Black-back (juv.), one Brünnich's Guillemot and one Herring-Gull (*Larus argentatus*). On the 22nd ($41^{\circ}55'N$, $61^{\circ}55'W$) nothing was seen but Little Auks, which were frequent in ones, twos and threes, during brief counts, density being of the order of one per sea mile. On the 23rd ($40^{\circ}40'N$, $65^{\circ}0'W$) another strong gale was met (Force 9), the only birds seen being two Pomarine Skuas (*Stercorarius pomarinus*) between 10.15 a.m. and 10.30 a.m., and one Herring-Gull from 6.15 p.m. Several Herring-Gulls, adults and juveniles, were the only birds on the 24th ($39^{\circ}33'N$, $67^{\circ}35'W$), but on the 25th ($39^{\circ}45'N$, $72^{\circ}25'W$) three or four Gannets were seen before 10 a.m. and there were many Herring-Gulls from 1 p.m. onwards to Long Island.

1ST EASTBOUND VOYAGE, LATE AUGUST, 1945.

Leaving New York on the *Nieuw Amsterdam* on August 24th ($40^{\circ}24'N$, $73^{\circ}23'W$) H.G.A. noted off the New Jersey coast some presumed Wilson's Petrels, some Herring-Gulls and Laughing Gulls (*Larus atricilla*), some Common Terns (*Sterna hirundo*), an Arctic Skua (*Stercorarius parasiticus*), and a Black Tern (*Chlidonias niger*). On 25th ($40^{\circ}37'N$, $62^{\circ}50'W$) the only birds were a Yellow-shank (?) (*Tringa flavipes*?) flying past south and a Cory's Shearwater, both at 10 a.m.; a Fork-tailed Petrel at 11 a.m., and an Audubon's Shearwater at 6.30 p.m.

The 26th ($41^{\circ}44'N$, $51^{\circ}58'W$) was strikingly richer. During the morning several petrels were seen, including a Wilson's and a White-faced Storm-Petrel or Frigate-Petrel (*Pelagodroma marina*) and two shearwaters which were probably Audubon's, although H.G.A. notes that the size seemed small even for that species. Between 5.30 and 6.30 p.m. some dozens of petrels were met, including mostly Fork-tailed, which "leapt high above the waves... with characteristic fluttering flight," a few Wilson's "smaller, darker and with legs projecting beyond tail," and one or two close to the boat with a much less lively flight which appeared to be Storm-Petrels (*Hydrobates pelagicus*). From 6.30 p.m. onwards there were many Great Shearwaters (*Puffinus gravis*) and some Cory's, with one Sooty, one unidentified tern (? Arctic, *Sterna macrura*?) and two Arctic Skuas.

On the 27th ($45^{\circ}0'N$, $41^{\circ}41'W$) the only birds observed were petrels, chiefly Leach's Fork-tailed, seen on and off throughout the afternoon. On the 28th ($47^{\circ}44'N$, $30^{\circ}17'W$) H.G.A. did no observation, and on the 29th ($49^{\circ}21'N$, $18^{\circ}03'W$) the only birds were two Cory's Shearwaters seen with a school of dolphins at 6 p.m.

On August 30th ($49^{\circ}42'N$, $4^{\circ}55'W$) after passing the Scillies at 8.30 a.m. (as already recorded in *Brit. Birds*, Vol. xxxix p. 56) two or three Cory's Shearwaters and two Gannets were the first offshore species noted at the entry to the Channel, followed between 10 a.m. and 11 a.m. by about 20 more shearwaters, of which seven or eight were identified as Cory's, three as Great and four as Manx (*Puffinus p. puffinus*), with more Gannets in all plumages. After this fog interfered with observation until 1 p.m., and no more shearwaters were seen, although Gannets and various inshore and land species were observed in the Channel.

2ND EASTBOUND VOYAGE, QUEEN ELIZABETH, MID-OCTOBER, 1945.

Sailing from New York on October 12th at 1.30 p.m. E.S.T., the first offshore record was a small falcon with long narrow, quick-beating wings which flew alongside at 8.30 a.m. (Atlantic Time) on the 13th, roughly 100 miles S.E. of Cape Sable, Nova Scotia. It was almost certainly an American Merlin (*Falco c. columbarius*). At noon we reached $42^{\circ}56'N$, $62^{\circ}20'W$ and shortly afterwards we ran into Cory's Shearwaters, first in ones and twos and then in parties, and about 5 p.m. (some 70 miles off Sable Island), we ran into a flock of 40 or more which rose from the water just by us. In all we saw probably between 150 and 200 in less than five hours. From the forepart of the ship the yellow bill and narrow white patch at the tail-base were distinguishable in several cases at fairly close range; the head markings, with their tendency to spill over to the sides of the neck, were very indistinct in birds rising parallel with us. They easily kept abreast at 29 knots in a fresh crosswind. The only other birds seen this day were storm-pétrels, small black birds with clear white rumps and rather strong flight, of which about six were noted, single (except for one couple), between 3 p.m. and 5 p.m. They were probably Wilson's Petrels.

On October 14th, skirting the Newfoundland Bank, we met a remarkable skua migration. Between 8.50 and 9.05 a.m. (ship's time) probably over a hundred came within half a mile of us, some in small parties, but mostly in ones, twos and threes. Plenty could be closely examined, the sea being calm and the weather bright and cloudless, and all of these were Arctic Skuas, the great majority—at least three-quarters—being light phase birds. All were flying strongly at a height of 10-30 ft. and a speed of about 30 knots, apparently on a course almost parallel with ours but rather more southerly, roughly in the direction from the Gulf of St. Lawrence towards the Azores. When observation was resumed at 9.30 a.m. (after twenty minutes break) this impressive migration could no longer be seen, and during the rest of the day not more than 10 additional odd birds of this species were seen. We did, however, about 11 a.m. see a close party of 11 larger, darker-looking skuas fairly near, one of which was certainly a Pomarine with the characteristic tail, and the rest were probably of the same species, but mainly, if not all, immatures. These were flying on the same

course as the Arctics and this observation tends to confirm Wynne-Edwards' suggestion that some North American birds of these two species may—like the Arctic Tern—make a transatlantic migration to winter quarters.

Up to noon, when we reached $42^{\circ}56'N$, $47^{\circ}46'W$, we saw a few Fulmars, about half-a-dozen in all, in the light phase. During the morning Cory's Shearwaters were far less frequent than the previous day, although odd birds were seen at intervals; they increased somewhat in the afternoon.

After the skua migration had passed, storm-petrels were easily the most numerous birds, increasing in the afternoon. We certainly saw over a hundred this day in ones, twos and threes, and occasionally parties of up to five, so well spaced that we were rarely out of sight of them for more than a few minutes. They flew with swallow-like but deeper and more vigorous wingbeats, always within two-three feet of the water. The broad white rumps, black mantles and brownish or greyish patches on the middle of the wings were often conspicuous, and in two or three cases we could make out the yellowish feet extending beyond the tail. J.H.L. observed a very few birds this day with quite different bounding flight which might have been Leach's (*Oceanodroma leucorrhao*). The great majority appeared to be Wilson's, but it is perhaps safest in view of the great difficulties of identifying these very small birds from a large ship to put a query after all those whose feet could not be made out.

On October 15th ($47^{\circ}05'N$, $34^{\circ}00'W$) the only species seen all day were Cory's Shearwaters and Wilson's (?) Petrels, in the proportion of about three of the first to one of the second. In a rough count, between 10.30 and 11.30 a.m. (ship's time), J.H.L. saw approximately 50 shearwaters and approximately 20 petrels, equivalent to about two birds per mile. J.H.L. notes a distinct tendency for the two species to associate. Undoubtedly they do so on occasion, attracted either by each other or by good hunting at a certain spot, but the majority of the petrels were seen in ones, twos and threes by themselves, while the shearwaters (especially when resting on the water) would gather in parties of up to 20 or more. It is noteworthy that in no case were petrels seen in the ship's wake, although they may have frequented it too far astern to be seen. In only one case were petrels seen paddling with their feet.

On October 16th ($49^{\circ}11'N$, $18^{\circ}47'W$) we ran out of the fair weather into high head winds and troubled seas. Visibility was generally poor. Despite much watching no birds were seen all day.

On October 17th ($49^{\circ}55'N$, $3^{\circ}36'W$) we passed well south of the Lizard shortly before observation began at 8.50 a.m. G.M.T. Visibility was excellent and the Channel was full of birds, the most surprising being large numbers of shearwaters, differing from *kuhlii* in smaller size, absence of extension down sides of neck of dark colour from upper-parts, and lack of a white patch over the tail-base, from *gravis* also in the lack of white above the tail

and the lack of a "cap," and from *puffinus* in the contrast between the dark head and blackish primaries and the brown mantle and remaining upper feathers of the wings, together with apparently larger size. Although these birds diverge from *The Handbook* description of the Balearic Shearwater (*P.p. mauretanicus*) in appearing most definitely white and not at all dusky underneath, they cannot reasonably be attributed to any other form. According to Mayaud (quoted in *The Handbook*) *mauretanicus* migrates regularly round the Britanny coast and up to the Somme during July-September, and Prof. V. C. Wynne-Edwards states (*in litt.*) that he has come to the conclusion that the flocks of shearwaters which he saw on September 10th, 1933, between the Casquets and an area 23 miles off Prawle Point, Devon, were *mauretanicus* and not *kuhlii* as he considered at the time. Nearly thirty examples of *mauretanicus* have been shot off the Channel and East coasts of Great Britain, but considering this total and the bird's distinctive appearance it is surprising to find that there are apparently no British sight records.

On the present occasion there were often 30-50 of these birds in sight at a time, and sometimes even in a single flock; the total number seen must have run well into four figures between the entrance to the Channel and the waters off Torbay, after which odd birds were observed for another fifty miles or so eastwards.

3RD EASTBOUND VOYAGE, QUEEN MARY, OCTOBER, 1945.

I am indebted to Sir Cyril Hurcomb for the following notes:—

"I travelled on the Queen Mary on much the same course a week later than E.M.N., leaving New York at dusk on October 19th. My observations were intermittent.

On the first morning out (October 20th, Noon position $40^{\circ}24'N$, $65^{\circ}17'W$) one of the American Wood-Warblers, which may have been a stowaway, was lurking among the life-rafts but disappeared before it could be identified.

In the early afternoon a few Cory's Shearwaters began to appear on both sides of the ship and were seen in increasing numbers till dusk. Brown markings on the sides of the neck well below the cap were very noticeable and the bills were distinctly not blackish. In some cases the narrow V-shaped white patch above the tail was clearly distinguishable. In general, from the high deck, in a strong light the predominance of brown in the plumage showed up well. Their skimming speed was about that of the ship (24 to 25 knots), but they easily went ahead of her at will.

I had also seen on this day two or three single storm petrels which from their size and outline I took to be Wilson's Petrel.

On the next day, October 21st (Noon position $41^{\circ}48'N$, $53^{\circ}32'W$) Cory's Shearwaters were still numerous especially in the afternoon. I then saw one large party numbering over 30 birds swimming in the water; a few took off and others joined the group while I watched it. Further parties of ? Wilson's Petrels were seen this day. I also saw one Fulmar and from descriptions given to me others were seen.

On October 22nd (Noon position $45^{\circ}28'N$, $40^{\circ}19'W$) visibility was poor and in the evening we ran into a considerable swell. I only saw two or three shearwaters at a distance too great for satisfactory identification. Their blackish appearance made me doubtful whether they were Cory's.

On the fourth day, October 23rd (Noon position $48^{\circ}18'N$, $26^{\circ}28'W$) from mid-day onwards shearwaters which appeared to be Great Shearwaters were to be seen on each side of the ship. The contrast between upper and lower parts, especially in the head, was very marked in all instances.

On the fifth day, October 24th (Noon position $49^{\circ}32'N$, $12^{\circ}37'W$) in the afternoon about 150 to 200 miles south west of the Scillies and south of Ireland more shearwaters were seen and a flock of about 20 Kittiwakes followed the wake of the vessel for a time. Also a Great Skua (*Stercorarius s. skua*). Shortly afterwards a Peregrine (*Falco p. peregrinus*) flew twice round the ship, but apparently did not settle.

As we passed the Scilly Isles about 9.30 p.m. on October 24th nothing could be seen in the coastal zone or the mouth of the English Channel. On the last two days we were following the wake of an exceptionally severe storm.

By daylight next morning we were off the Isle of Wight with the storm still raging and only the ordinary gulls to be seen."

TRANSATLANTIC AIR JOURNEYS.

It may be worth adding that in a number of transatlantic flights both by Liberator and Lancastrian aircraft and by Boeing Clipper flying-boats no birds have been observed except immediately on take-off and while coming in to land, apart from Gannets on Grassholm and in surrounding waters. Adult Gannets are about the only birds which can readily be picked up from aircraft at normal flying heights. I saw considerable numbers off South Portugal between about 36° and 38° N. while coming up in a Sunderland from Port Lyautey to Lisbon on December 23rd, 1943.

SUMMARY.

In a number of transatlantic crossings some further material has been gathered on bird distribution, especially during the autumn migration period, and mainly in areas south of those traversed by Wynne-Edwards during his series of transects. Two voyages at a week's interval over a similar course show a striking stability in the general picture of range and numbers of various species, and even at intervals of weeks or months the Western Approaches, the Newfoundland Bank area and to a less extent the waters round the Azores show associations whose richness contrasts with the barren intervening seas.

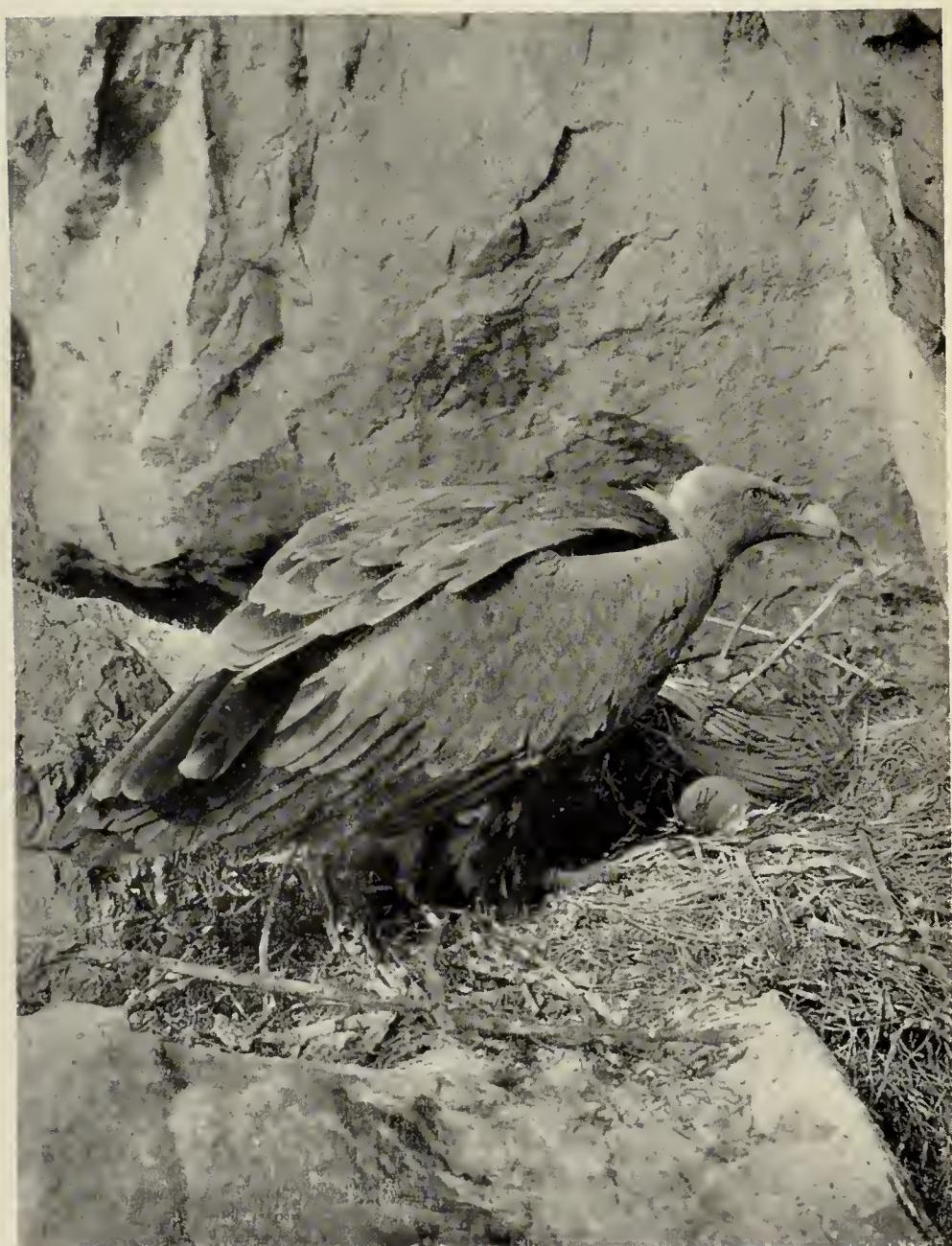
Cory's Shearwaters were found to be common during September-October and early November, in waters south of Nova Scotia and from there eastward to approaching the longitude of the Azores. The northern limit certainly extends north of 47° in October in



GRIFFON VULTURE (*Gyps fulvus*) AT NEST: S. SPAIN, 1935
(Photographed by R. Atkinson).



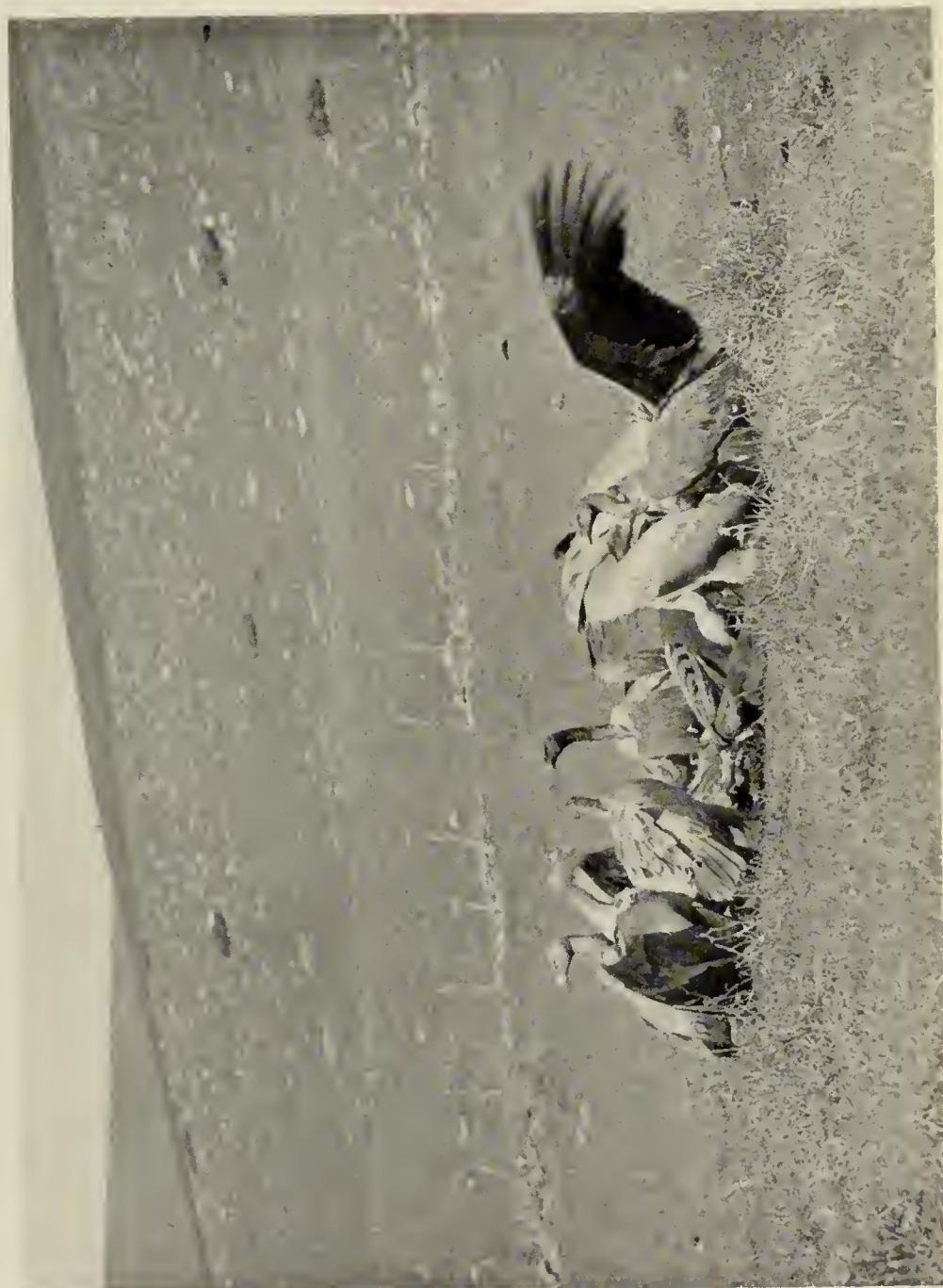
GRIFFON VULTURE (*Gyps fulvus*) AT NEST : S. SPAIN, 1935.
(Photographed by R. Atkinson).



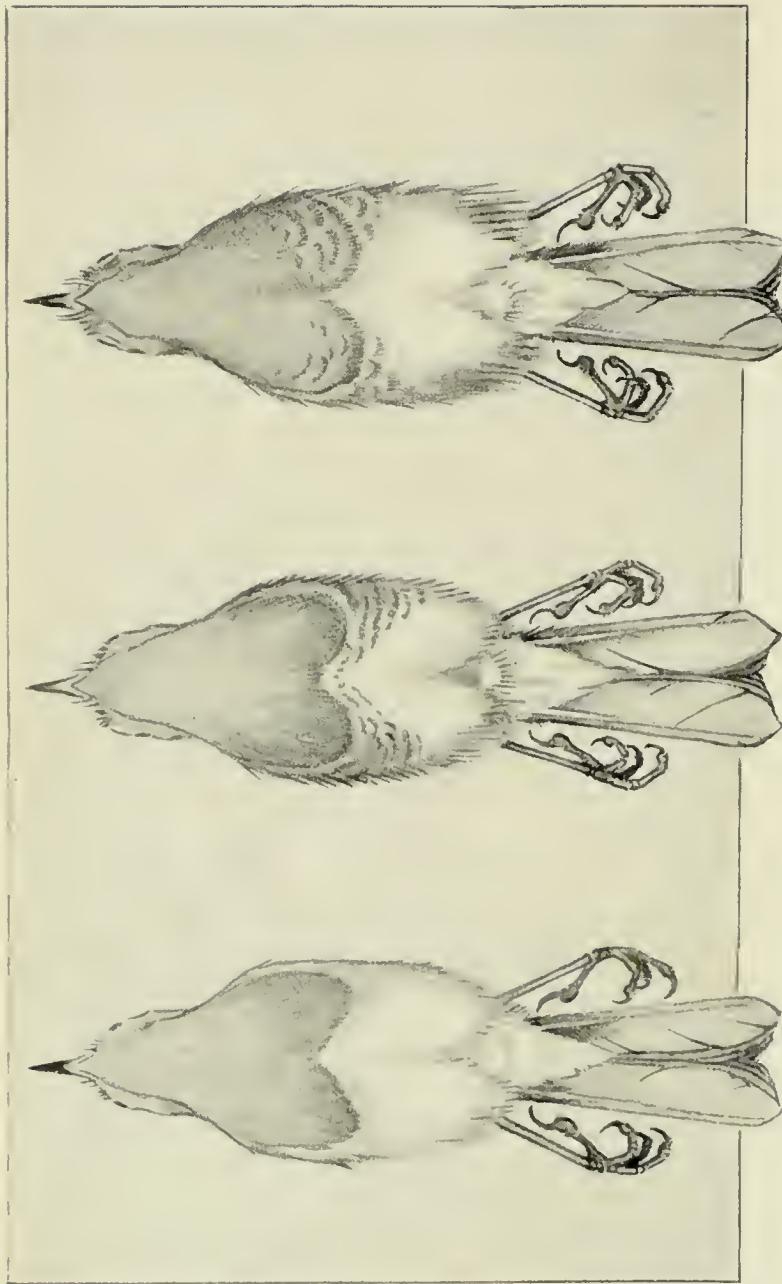
GRIFFON VULTURE (*Gyps fulvus*) AT NEST : S. SPAIN, 1935.
(Photographed by R. Atkinson).



GRIFFON VULTURES (*Gyps fulvus*) DISPUTING ACCESS TO CARCASS : S. SPAIN, APRIL, 1935.
(Photographed by George Yeates).



GRIFFON VULTURES (*Gyps fulvus*) AT CARCASS: S. SPAIN, APRIL, 1935.
(Photographed by George Yeates).



VARIETIES OF THE ROBIN BASED ON SKINS IN THE CLANCEY COLLECTION.

- A. Normal type.
- B. Variety with dark cinereous squamiform markings on sides of lower breast.
- C. A similar variety in which the squamiform markings extend over part of the rufous breast.

mid-Atlantic, and the southern runs below 40°. All four autumn voyages agree in finding Cory's Shearwaters locally or generally common in the western North Atlantic, but none east of about 30° west in latitudes from about 43° upwards. The August transect on the other hand shows a definite patch of Cory's from the mouth of the Channel to the S.W. of Ireland, as well as the west Atlantic patch, while in March this species is only found fanning out sparsely up to 5-600 miles N.E. and N.W. of the Azores. These results approximately fit the pattern shown in transects farther south-west in 1929. Great Shearwaters were found in the West Atlantic in one area in August and were met in October sparingly from about 26°W. Balearic Shearwaters (*P. p. mauretanicus*) were found in large numbers at the entry to the English Channel in October.

Storm-petrels, apparently mainly if not wholly Wilson's (*Oceanites oceanicus*), were also common in October-November in the west Atlantic, between Nova Scotia and the Azores, but although their range almost coincided with that of Cory's Shearwaters their main strength appeared to be distinctly more massed towards the north and west. (Here is the greatest discrepancy between the 1944-5 results and Venables (*Brit. Birds*, Vol. xxxiii, p. 152), who found no petrels except a single Leach's in October). In August Wilson's Petrels are in a minority in these waters, Leach's being the more numerous form.

The large eastward migration of Arctic Skuas and Pomarine Skuas on October 14th appears not to have been paralleled by other observations, although Wynne-Edwards (p. 307) records a very similar experience with Long-tailed Skuas (*Stercorarius longicaudus*) in May.

The absence of Kittiwakes from the pelagic zone in autumn in these latitudes corresponds with Venables, and both the October and the March, 1945, voyages show Fulmars only in a small pocket below the Newfoundland Banks, which again matches reasonably closely with Venables, who also found only a small pocket of them but considerably farther west. Although the picture of species distribution in Venables matches so closely with the picture emerging from this paper, the number of individual birds which he saw was, however, inexplicably smaller throughout.

CONCLUSION.

It may be useful in conclusion, in the light of this and earlier papers to reduce to the simplest outline the present known distribution of the regular North Atlantic pelagic species. There are only eight of these species which are numerous for long periods over wide areas. Of these, four are northern-based, two (the Kittiwake and Fulmar Petrel) breeding right across the Britain-Iceland-Greenland-Canada Bridge and wintering in numbers only about as far south as the Portugal-Azores-Nova Scotia line, while the other two (the Storm-Petrel, *Hydrobates pelagicus*, and Leach's Fork-tailed Petrel) have their main breeding strength on the east and

west sides of the ocean respectively, and extend in winter south of the Equator.

The fifth important pelagic species, Cory's Shearwater, is based on the Canary-Madeira-Azores island groups in the east-central part of the North Atlantic, pushing out east and west after the breeding-season to reach European and American waters up to about 48° or even 50° N. in substantial strength, receding about November to areas south of its breeding-grounds, and pushing up again in mid-Atlantic in small numbers 400-600 miles beyond the Azores by mid-March (see also Venables, *Brit. Birds*, Vol. xxxi, p. 296).

The remaining three species are all based in the Southern Hemisphere, invading the North Atlantic in strength almost exclusively during our summer and autumn. Of these the Great Shearwater apparently makes its chief movement from Maine by Newfoundland Bank up to Greenland waters, returning nearer the western approaches of Britain between May and November, with a subsidiary earlier autumn movement south-westward from Newfoundland Bank. The much scarcer Sooty Shearwater appears rarely to range so far north and shows no such well-marked drift as the Great; while the third southern species (Wilson's Petrel) ranges up only to about the Newfoundland-Ireland narrows, below which it becomes locally common in autumn.

The identification of birds at sea is often difficult and the difficulty is increased by the fact that knowledge of the field-characters of some of the birds concerned is still incomplete. This is particularly true of the shearwaters, and the field descriptions in *The Handbook* of *P. kuhlii* and *P. p. mauretanicus* appear to call for some revision (in respect of the white basal patch on the tail which is normally conspicuous in *kuhlii* as well as in *gravis* and in respect of the shade and colour distinctions, especially as between the upper and under surfaces in specimens of *mauretanicus* which do not belong to the more extreme dusky type).

Acknowledgments are due, in addition to those already named, to Commodore Sir James Bisset and Staff Captain Woods of the Queen Elizabeth and to Captain Fall (then of the Queen Mary) for their help in supplying navigational data.

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

VI. THE GRIFFON VULTURE.

Photographed by R. ATKINSON and GEORGE YEATES.

(Plates 31-35).

THE Griffon Vulture (*Gyps f. fulvus*), of which species a single immature example was captured near Cork in 1843 and others have been reliably reported as seen on two occasions in England, has in recent years become almost, if not quite, extinct in the Causses region of Southern France, its most northerly breeding place in Western Europe, but remains common in Spain, more particularly in the south of the country, where our photographs were taken. Here the generally backward conditions and the lack of regular veterinary services result in sufficiently large casualties amongst domestic animals, especially during the heat and drought of the summer months, to maintain a large vulture population, and the frequent presence of one or several of these great birds sailing in the air is one of the characteristic features of Andalucia which cannot fail to delight the visiting ornithologist.

When soaring in the air the Griffon Vulture, with its immense wing-span, is a magnificent sight and beyond question one of the most imposing of European birds, and even at close quarters on the ground, where mainly on account of the ugly bald head its appearance is not particularly prepossessing, it has a certain impressiveness by reason of sheer size.

Mr. Yeates's photographs were taken in 1935, on an expedition in company with the writer and Mr. H. J. R. Pease, at the carcase of a pony found dead near Vejer, Andalucia. The first (plate 34) shows the earliest arrivals endeavouring to keep off others from the carcase, and gives a good idea of the impressive wing-spread. The second shows a later stage with a considerably larger congregation. It may be mentioned that a few days earlier on the same expedition no less than approximately a hundred and fifty of these great birds were counted round one carcase in another locality. This is a fair illustration of the abundance of Griffon Vultures in South Spain, though it should be realized that such assemblies are evidently drawn from a considerable area owing to the well-known habit of vultures of observing the movements of others at a distance when prospecting in the air for food.

Mr. Atkinson's striking photographs at the nest were taken at crags in the same region in the same spring, as described in his book *Quest for the Griffon* (1938). B. W. T.

NOTES.

SUN-BATHING BY BIRDS.

THE habit of sun-bathing by passerine birds is discussed in a note by T. S. Williams (*antea*, p. 152). As indicated in the Editorial comment thereto this is probably commoner than at first sight appears to be the case. To the list of species given I can add the following: Crested Lark (*Galerida cristata*) (Belgium and the Balkan Peninsula), Sky-Lark (*Alauda a. arvensis*), House-Sparrow (*Passer d. domesticus*), Willow-Warbler (*Phylloscopus t. trochilus*), Blackbird (*Turdus m. merula*), and Hedge-Sparrow (*Prunella modularis occidentalis*) (British Isles).

I have elsewhere (*Handlist Birds Sevenoaks Dist.*, 1942, p. 91) called attention to the obvious pleasure with which tame Tawny Owls, (*Strix aluco sylvatica*) indulge in this practice, and feel convinced that sun irradiation plays an important rôle in the process of moult. It seems reasonable to suppose that this may operate not only through its local effects in stimulating the feather papillæ to develop, but also through the central nervous and endocrine systems. It seems most significant that a crepuscular and nocturnal species such as the Tawny Owl should deliberately seek out perches directly exposed to the full influence of solar rays at the season of the moult.

JAMES M. HARRISON.

GOLDEN ORIOLE IN LANCASHIRE IN JUNE.

THE occurrence of a male Golden Oriole (*Oriolus o. oriolus*) in the wooded policies of an estate to the north of Burnley, Lancashire, on June 6th, 1946, seems worthy of record on account of the late date and north-westerly situation (*vide Handbook of British Birds*, Vol. i, p. 49.).

The bird showed a strong predilection for oaks, and was excessively wild. I was unable to obtain evidence as to breeding, and further visits to the locality proved abortive, thereby supporting the view that the bird was on passage. P. A. CLANCEY.

GREENFINCH ADAPTING CHAFFINCH'S NEST.

IN connexion with Mr. P. A. Adolph's note on nest-adaptation by Greenfinches (*Chloris c. chloris*) (*antea*, Vol. xxxvii, p. 134) the following may be of interest.

On May 11th, 1946, I found in my garden near Crawley, Sussex, the nest of a Chaffinch (*Fringilla cœlebs gengleri*) containing three well-fledged young, which left the nest on May 14th or 15th. I looked again at the nest on May 22nd and found that it had been freshly-lined with brown chicken-feathers, nothing else having been added. Four Greenfinch's eggs were laid in the nest and three young were hatched, which are due to fly in a day or two at the time of writing. I. J. FERGUSON LEES.

CHAFFINCHS' NESTS HIGH IN TREES.

In *The Handbook*, it is stated that the Chaffinch (*Fringilla cælebs gengleri*) builds "generally at no great height."

In my garden in N. Cornwall, the majority of Chaffinches breed every year, in its large conifers, at heights of 20 to 60 feet. In 1944, a brood was reared in a nest not less than 70 feet high. Elsewhere, a nest in an ash-tree was about 50 feet above the ground. On May 26th, 1946, a strong brood flew from a nest, in an *insignis* pine, which I reckoned was at least 75 feet up and within a few feet of the top.

The latter nest was in a position fully exposed to the strong and cold north-east winds and driving rains which prevailed through the greater part of the period of breeding. B. H. RYVES.

[In the Supplementary Additions and Corrections to *The Handbook*, Vol. v, p. 287, it is noted that in the Spey Valley, Chaffinches frequently nest 40-60 feet up in pines and no doubt there are other areas where this is not uncommon.—EDS.]

STATUS OF THE CORN-BUNTING IN ESSEX.

BOTH Glegg (*A History of the Birds of Essex*, 1929) and more recently Alexander and Lack (*antea*, Vol. xxxviii, p. 42) have expressed the opinion that the Corn-Bunting (*Emberiza c. calandra*) has decreased of recent times in Essex. This does not conform to my observations and, on the contrary, I think that the species is probably on the increase.

On the peninsula between the Rivers Crouch and Blackwater Glegg stated (*ibid*, p. 34) that he identified the Corn-Bunting on the former river only as far inland as Burnham; and on the latter, as far as Lawling Creek. He described it as "not numerous" in these restricted areas.

In the spring of 1945 I found the Corn-Bunting common on the Crouch as far inland as Fambridge, six miles west of Burnham, and also at Nevendon on the Southend road, which is fourteen miles south-west of Glegg's limit; it may well be found in the intervening country. My nephew (Mr. J. R. Mallinson) tells me that birds are present in the Wickford district in spring and winter. I found pairs all along the south shore of the Blackwater estuary right up to the built-up area of Maldon, where I listened to six males singing in perhaps half a mile of road—and not only to Lawling Creek as stated by Glegg; also at Goldhanger on the north shore.

Although these areas are but a small part of Essex as a whole, they do comprise a large proportion of the territory alluded to by Glegg as being the chief haunt of the Corn-Bunting in the county. It is apparent from these remarks either that the frequency of the species has been underestimated in the past, or that a very considerable increase has taken place in recent years. It is as well to check the tendency of repeating older statements on the increase or decrease of a species without confirmation by up-to-date observation.

T. BISPHAM.

RUSTIC BUNTING ON FAIR ISLE.

THE first half of May, 1946, was most unfavourable for migration on Fair Isle with winds almost constantly from a westerly direction. Only on May 11th did the wind go round to between south and east, a very light breeze, but as usual this was enough to bring in a few migrants. Not more than a dozen individuals in all, comprising nine species, were seen, but they included a male Rustic Bunting (*Emberiza rustica*). It was first flushed from the roadside, I think out of the ditch, calling "tsip, tsip, tsip," and settled again farther on, where I had quite a good but short view of it working about on the damp bottom of the ditch. Later it was found again in an adjacent swampy area intersected by several ditches, in one of which, containing a little standing water, it permitted excellent views at about 15 yards. After a quarter of an hour it left the bottom of this ditch for another.

Viewed from behind it resembled superficially a small version of a Lapland Bunting (*Calcarius l. lapponicus*) I had been watching the previous week, with rich brown, dark-streaked back, cinnamon chestnut hind neck, and head black with a central white stripe from crown down nape. It had a white stripe over the eye and below it a broad black stripe embracing most of the ear coverts; while the sides of the head below this, and also the chin and throat, were white. The most striking feature was the pinky-cinnamon streaking on the flanks and breast, the flank markings clear and well separated; otherwise the underparts were white. The white in the outer tail-feathers was prominent when it flew. The bill was brown or horn with a faint vermillion wash. Almost certainly the same bird was seen again on the 13th, when it was flushed from a boggy, muddy slope. It flew up, on to a henhouse roof, giving a good view of the striking heaviness of streaking on the breast, almost a solid band of colour. On this occasion the call was noted as "tcik, tcik." The bird had a plump appearance with rather loose or ruffled feathers, domed crown and squat carriage.

P. A. D. HOLLOWAY.

SITING OF CRESTED LARKS' NESTS.

WHEN serving in the Middle East I devoted some attention to the breeding habits of the Crested Lark (*Galerida cristata*) in Palestine.

Of eleven nests, which were beautifully woven and cup-shaped, one outstanding point was that in all cases without exception they were built under a clump of grass or other vegetation with the outlook and entrance to the north or north-east, thus sheltering them as much as possible from the sun during the heat of the day. The temperature during May varied from about 80° to 98°F. in the shade.

BERTRAM M. A. CHAPPELL.

SKY-LARKS NESTING IN ARTIFICIAL DEPRESSIONS.

DURING March, 1944, in an area of rough pasture near Oxford, I prepared twenty-four holes about four and a half inches in diameter

and three inches deep near or beneath clumps of grass. Of these depressions nine were occupied by Sky-Larks (*Alauda a. arvensis*) as sites for their nests. The experience is interesting as suggesting that, in this area at any rate, fully suitable natural sites are none too plentiful for the potential breeding population and that even in a bird like the Sky-Lark, whose nesting requirements appear by no means exacting or highly specialized, scarcity of such sites may operate as a limiting factor. BERTRAM M. A. CHAPPELL.

WOODCHAT SHRIKE IN KENT.

ON May 12th, 1946, I was in company with Mr. D. C. Pegram bird-watching in the Isle of Grain, N. Kent. While walking along the road by Grain Crossing Halt a bird showing much black and white about the size of a Red-backed Shrike flew across the road a few yards in front of us and alighted on the top of a bush. I quickly put my glasses on the bird and was surprised to find it was a male Woodchat (*Lanius s. senator*).

Between 1943 and 1945 I knew the bird in Algeria, Tunisia and Italy.

Both Mr. Pegram and I followed the bird for three quarters of an hour and obtained excellent views. It perched on the tops of bushes, telegraph wires and the posts of marsh fences.

A brief description is as follows:—crown and nape chestnut, fore-head, ear-coverts, sides of neck, back and wings black; wing-bars, scapulars and upper tail-coverts white; rump greyish; under-parts creamy white.

Later in the day we again watched the bird at the same spot for about half an hour. It perched on the post of a marsh fence and kept shooting down into the grass to catch insects. Having secured an insect it returned to the post to devour it. The operation was repeated many times. ERIC GILLHAM.

IRREGULAR LAYING OF SPOTTED FLYCATCHER.

ON May 23rd, 1946, at Pease Pottage, Sussex, I found the beginning of the nest of a pair of Spotted Flycatchers (*Muscicapa s. striata*) on a ledge inside a summer-house. The nest was complete and lined by May 26th and the first egg was laid on May 28th. The second egg was laid on the 29th and then a day was missed before the third egg appeared on the 31st. Then finally the last egg was laid after an interval of two non-laying days—on June 3rd. The eggs were all laid between 4.30 p.m. and 6 p.m. After laying the last one the bird was off the nest for the rest of the evening; she was off again for much of the following morning and only really settled down to steady incubation in the afternoon. All the eggs hatched on June 15th, and as incubation started on the 4th, this gives an incubation period of only 11 days. I. J. FERGUSON LEES.

NOTE OF WILLOW-WARBLER.

THE queer chittering note of the Willow-Warbler (*Phylloscopus t. trochilus*) that Dr. S. Smith and Miss S. M. Butlin describe (*antea*,

pp. 118 and 215) I first heard this summer, and it was caused by the presence of a Tawny Owl (*Strix aluco sylvatica*) in a tree adjoining a hazel-bush where a brood of newly-fledged young Willow-Warblers were grouped together. The adult Willow-Warbler (only one was seen) kept flitting about from branch to branch near the owl, uttering the chittering note until the owl finally flew away. I imagine the note to be one of fear.

R. H. BROWN.

COURTSHIP FEEDING OF WILLOW-WARBLER.

A note from my diary on courtship feeding of the Willow-Warbler (*Phylloscopus t. trochilus*) may be of interest in connexion with the notes of Messrs. Dunt and Tucker on this subject (*antea*, pp. 25 and 88).

When trying to find the nest of a pair of Willow-Warblers at Santpoort, near Haarlem, Holland, on June 10th, 1944, I saw the male bird feeding the female. As I did not know at the time that this was of any particular interest I did not spend a long time searching for the nest, so that I cannot say whether the birds had a nest with eggs, young, or no nest at all, but if there was one the birds had already been some time away from it when the feeding took place, so that this cannot be called feeding during incubation.

Mr. Dunt writes that he recognized the female by "no song and grass in bill." The latter is not quite an infallible point, because I have observed a male bird carrying grass. This was on May 1st, 1943, when the male of a pair which I was watching was seen with a piece of hay in his bill and disappeared with it amongst a growth of Lily-of-the-Valley (*Convallaria majalis*). He sang from time to time and for a moment was joined by the female, which was a yellower bird. I do not think that the birds were already building; they gave the impression of being still in search of a suitable site.

G. F. MEES.

LATE SEDGE-WARBLER IN DEVON.

On October 28th, 1945, I was on the bank between the Exe estuary and the Exeter canal when I saw a small bird descend from a large bush and disappear into a bed of reeds. Halting about twenty yards from the place I awaited the reappearance of the bird and very soon it climbed up a reed-stalk into full view. It was a Sedge-Warbler (*Acrocephalus schœnobaenus*) and its pale, yellowish crown with dark specklings showed it to be an immature bird. It remained thus conspicuously perched for an appreciable time, allowing me to study it at leisure through 10 x binoculars before it flew to another spot. A few Sedge-Warblers breed in this particular area, and on October 10th, 1937, I saw another late bird there.

R. G. ADAMS

[The latest date recorded in *The Handbook* is Oxfordshire, October 26th, 1886.]

DISPLAY OF BLACKBIRD.

THE following notes on the display of the Blackbird (*Turdus m. merula*), which I watched on March 15th, 1945, may be of interest,

as there appear to be only a few published observations on the display of this species, which seems to vary a good deal in detail.

A male sitting on a branch singing very loudly leaned over towards the female with head and neck rigidly stretched out in the attitude described by J. M. Boraston, as quoted in *The Handbook*, but in this particular case the tail was not depressed. During this first stage the female, sitting on another branch, occasionally looked across at the displaying male.

Another female arrived, and the male fluttered up to a branch above the two females, stopped singing and continued the display with tail depressed vertically against the branch, rump and mantle feathers puffed out and crouching posture on the branch.

The male, no longer singing and with wings held slightly out from the body and tail, in a constant motion of fanning to the limit and closing, turned round and round on the branch the whole time, swinging round at each turn. During this third stage, the whole body was inclined almost perpendicularly, and the stiffly depressed tail swung up and over the branch as the bird turned round unceasingly, with a gentle, rhythmic movement. The female looked up at the male during the whole of this third stage.

The male began singing again and flew at the second female with throat feathers puffed out. Then he pursued the first female from branch to branch, the female eventually flying off rapidly.

ADAM WATSON.

VARIETIES OF THE BRITISH ROBIN. (See Plate 36).

Two adult breeding males of the British Robin (*Erithacus rubecula melophilus*) collected in the upland country to the north of Burnley, Lancashire, in April, 1946, represent varieties of which I can find no record in available literature.

To take the first example (Fig. B), which was obtained on April 21st: this variety differs markedly from the normal type in having the grey fringe almost united below the rufous throat and breast in an incomplete cincture of dark cinereous squamiform markings. In the second example (Fig. C), taken on April 24th, the squamiform markings are decidedly less serried and extend well over the rufous breast, giving the bird a distinctly more nævose appearance than in the first variety considered. In all other respects the two varieties agree intimately with the normal type.

In all my experience with the species, both in this country and abroad, I have only seen varieties similar to the above on two previous occasions, namely, in two specimens shot in 1935 at Cathcart, Renfrewshire, and now no longer in my collection.

Further examples from Lancashire and neighbouring districts of Yorkshire are all characteristic of normal *Erithacus rubecula melophilus* Hartert.

P. A. CLANCEY.

[At a recent meeting of the British Ornithologists' Club, Dr. J. M. Harrison exhibited specimens of the Robin from southern

England showing somewhat similar characters to those described above, with a dark border to the orange breast, and draws attention to their resemblance to the Japanese Robin-like bird *Luscinia akahige* (see *Bull. B.O.C.*, Vol. LXVI, p. 69).—EDS.]

DISPLAY OF SAND-MARTIN.

As there appears to be no exact information on the display and coition of the Sand-Martin (*Riparia r. riparia*) I place the following observations on record, especially as they differ considerably from the aerial display-flight and coition performed by flying Swallows (*Hirundo r. rustica*), as described in *The Handbook*.

The pair of Sand-Martins which I observed were on the ground, at the side of a main road, an unusual place to see this species. The observations were made on June 19th, 1945.

Both birds were first seen crouching low on the ground, with bills and heads touching the ground and bodies motionless. The male then got up about a yard from the female and walked towards her with wings waving wildly and body swaying from side to side. He mounted the female's back and coition took place, during which the wings of the male stopped waving and were raised rigidly in a taut curve. Afterwards the female shook herself vigorously and both birds finally flew away.

ADAM WATSON.

KESTREL TAKING REDWING.

On March 23rd, 1946, when near the Darent, between Shoreham and Eynsford, I disturbed a Kestrel (*Falco t. tinnunculus*), which flew up from the ground about 20 yards away. When at a height of about 10 feet, it dropped a bird, which flew into a tree stump. After a time, the injured bird, identified as a Redwing (*Turdus musicus*), flew up with difficulty and, after alighting twice in a field, flew off into a tree. *The Handbook* does not record the Redwing as taken by the Kestrel, although the Fieldfare is mentioned. A large flock of Fieldfares was feeding in the neighbourhood, but I did not identify Redwings with them.

F. J. HOLROYDE.

SPARROW-HAWK IN OUTER HEBRIDES.

As the Sparrow-Hawk (*Accipiter n. nisus*) is a rare vagrant in the Outer Hebrides, it is perhaps worthy of record that on August 31st, 1945, I saw a female of this species on the isle of Barra. I was climbing the Hartaval, one of the larger hills on the island, when the bird flew over, travelling north. It perched for some moments on a jutting piece of rock, some hundred yards away, during which time I had a good view of it. It was a fully adult bird and appeared very tired and ruffled. The weather for a long time previously had been extremely fine and sunny and it cannot have been blown out of its course.

I. J. FERGUSON LEES.

POCHARD BREEDING IN WARWICKSHIRE.

SINCE there appears to be no record of the Pochard (*Aythya ferina*) breeding in Warwickshire since 1866, it is interesting to record that

a pair nested this year on a small pond near Chesterton in the south of the county. In February, and again in April, 1946, adult birds were seen. On June 9th we again visited the pool and after a short search found a single female accompanied by one duckling, which I judged to be about two and a half weeks old. The pair swam out into open water and were watched for twenty minutes or more in a good light and with the aid of binoculars.

It must be mentioned that although breeding in the county does not appear to have been proved for eighty years, south Warwickshire is very little watched by ornithologists, and it is quite possible that this species has bred at this particular water for a number of years and escaped notice. The pool at Chesterton is well off the beaten track and is ideally suited to the requirements of this species having at one end an area of over an acre of swampy vegetation and reed bed.

C. A. NORRIS.

ACTIONS OF LONG-TAILED DUCK UNDER WATER.

ON December 23rd, 1945, I watched a female Long-tailed Duck (*Clangula hyemalis*) on the Exe estuary. The bird was diving in a channel, close to one of the banks and in water so shallow that her back frequently showed above the surface and her feet kicked up little spouts of water.

I crossed the stream at a distance and approached the bird from the opposite direction, advancing when she was submerged and halting when she came to the surface. In this way I was able to make a final dash to the water's edge and within a few feet of me saw the bird's progress beneath the surface for several seconds. The beak was touching the sand all the time as if sifting it and the wings were held close to the body, which was elevated towards the rear. The feet were held behind the tail and more or less level with it, the webbed toes striking out rapidly and propelling the bird along.

R. G. ADAMS.

TURTLE-DOVE NESTING IN SCOTLAND.

HITHERTO there has been no evidence of the Turtle-Dove (*Streptopelia t. turtur*) having bred in Scotland. Three years ago, on a fleeting visit to the valley of the Leet near Coldstream, I was convinced that I heard the crooning of a Turtle-Dove just before dark, but lack of time and the thickness of the July foliage prevented me from verifying my conviction; since then, each summer, Turtle-Doves have been heard and occasionally seen, but no opportunity occurred of proving that they were actually nesting in the neighbourhood.

This year (1946) at the beginning of July, a pair began to frequent some shrubs which are conveniently overlooked from the windows of the house, and on July 10th one of the pair was seen making repeated flights with twigs in its beak to the top branches of a tall rhododendron bush only thirty yards below the window. The flimsy platform of a nest was completed that day and on the 13th

incubation of one egg had commenced, the bird sitting closely all day. Unlike most other Turtle-Doves I have watched in the south, one of this pair (I think the male) is remarkably shy, while the other is very confiding and appears to be unconcerned by the closest approach of a human being.

It seems reasonable to hope that these charming birds have established themselves as regular summer visitors to the Border country.

H. DOUGLAS-HOME.

WING-CLAPPING OF TURTLE-DOVE.

WITH reference to Mr. J. Tooby's note (*antea*, p. 29) on the above subject, at 7 p.m. on the evening of May 29th, 1946, I was watching birds at Little Eversden, near Cambridge, when a pair of Turtle-Doves (*Streptopelia t. turtur*) alighted on an overhead electric cable about fifty yards from me. They remained there perched for some five minutes, both crooning.

My attention was then directed elsewhere when I suddenly heard a vigorous clapping. On looking at the doves again I saw one in mid-air, making a short climb, at the peak of which it clapped its wings twice. It then re-alighted on the cable, but almost immediately climbed again, in one steep climb with half a dozen wing-beats at the top, and another shorter climb with two wing-beats. It then flew off in a northerly direction. The other bird remained for another five minutes and then flew off to the south.

E. M. BARRAUD.

UNUSUAL COMBINATION OF MIGRANTS IN LONDON AREA.

ON April 29th, 1946, we saw the following birds at the Brent Reservoir. One Grey Plover (*Squatarola squatarola*) in full breeding plumage, one Sanderling (*Crocethia alba*), two Bar-tailed Godwits (*Limosa l. lapponica*) and a female Common Scoter (*Melanitta n. nigra*).

It must be a rare occurrence for four comparatively unusual "inland" migrants to be seen in the London area at one time.

R. H. RYALL AND T. BISPHAM.

MOVEMENTS OF BAR-TAILED GODWITS ON WEST COAST OF SCOTLAND.

RECORDS which I kept at Ayr during the past four years seem to indicate that there has been a change in recent years in the passage movements of the Bar-tailed Godwit (*Limosa l. lapponica*).

All the text-books to which I have referred, including *The Handbook*, state that in Ayrshire (where mentioned) and generally on the West Coast this species is decidedly more numerous in autumn than in spring.

My observations covering the period November 1941 to August 1945 tell quite a different story. In 1942 I recorded 128 Bar-tails in the first six months of the year and only eight in the last six. In 1943

and 1944 the figures were respectively 244 and 116 (spring) and 22 and 9 (autumn); 306 birds of this species were recorded in spring 1945, whilst no autumn record was obtained up to August 15th, when I left the district. During the period covered I visited the shore three or four days a week throughout the year, and it must be borne in mind that the same bird or birds have probably sometimes been counted on a number of occasions. It is therefore, not the absolute value of the numbers given, but the ratio of the spring to the autumn figures which is significant.

March was the month in which most were recorded, whilst at the other end of the scale I saw none in any of the three Augusts covered and only one in three Octobers. The largest number ever seen together was 74 on March 9th, 1945. As regards the Black-tailed Godwit (*Limosa l. limosa*), its visits to Ayr, whilst too few to found conclusions on, also showed a greater frequency in spring than in autumn. It would be interesting to know if a similar change of habit has been noted elsewhere in the British Isles.

G. E. HUGHES ONSLOW.

WOOD-SANDPIPER AND OTHER WADERS IN WARWICKSHIRE.

ON May 9th and 10th, 1946, I had good views of a Wood-Sandpiper (*Tringa glareola*) on a marshy area by the River Avon near Coventry. Compared with the Green Sandpiper (*Tringa ochropus*), with which I am very familiar, many differences were apparent. The size appeared approximately the same, but the bird was distinctly slimmer, with longer legs. The upper-parts with their pattern of whitish markings agreed closely with the figure of the summer plumage in *The Handbook*, but the legs were a little lighter than those shown, being a dull yellowish with very little suggestion of green. In flight the appearance was lighter than that of the Green Sandpiper and the white on rump and tail less extensive. The undersides of the wings, very clearly seen in flight, were light grey. The call-notes, heard first on the ground, when suspicious, and in flight, were distinctly higher-pitched and more clipped than those of the Green Sandpiper and altogether less musical. When circling the marsh its high monotonous "chiff-iff-iff-iff..." continued without pause for a minute or more. I was using 8 x 30 binoculars, but the bird was so "tame" or indifferent that it several times permitted an approach to 10 or 12 feet.

A Black-tailed Godwit (*Limosa l. limosa*), evidently in almost full summer plumage, was seen on the same marsh from May 8th-10th and a single Ruff (*Philomachus pugnax*) in partial summer plumage on May 9th and 10th.

R. W. M. LEE.

FEEDING HABITS OF REDSHANK AND BLACK-HEADED GULL.

SMALL fish are mentioned in *The Handbook* as occasionally forming part of the diet of the Redshank (*Tringa totanus britannica*), but as

no species is mentioned it may be worth recording that on April 13th, 1946, I saw a Redshank swallow a small eel. It caught the eel in shallow water on the Kent estuary, Westmorland, pecked it about on a sand-bank, washed it and finally swallowed it.

On the same day and at the same place I saw four adult and one immature Black-headed Gulls (*Larus r. ridibundus*) feeding in an unusual manner. They were walking through shallow water with the head partly or wholly submerged, after the manner of a Green-shank, sometimes for a distance of two or three yards. One of them brought up and swallowed a small dark object.

J. A. G. BARNES.

GROUND DISPLAY OF KENTISH PLOVER.

VISITING Nordeney, one of the East Friesian Islands, on June 13th, and 14th, 1946, I found that the Kentish Plover (*Charadrius a. alexandrinus*) was very common there.

Several variations of ground display were seen. In the most common kind a male walking on either dry sand or wet mud would suddenly start to run "stealthily" with tail depressed vertically and spread wide showing the black centre and white edges. The legs were bent so that the body was close to the ground. The head was poked forward and held very low and the down-curved, half-extended wings flapped feebly, nearly touching the ground at each down stroke and not being raised as high as the horizontal. Covering perhaps 50 yards the male might resume a normal attitude or pause in the stiffly maintained crouching position with wings closed before running forward again; or it might fly a few yards, only to land in the stiff depressed display attitude, starting to run at once. Several times at the end of a short run a male squatted on the sand and remained quite still for about 10 seconds; sometimes it shuffled quickly round in the sand two or three times, maintaining its body quite level (i.e. it was not rubbing the sand with its breast). These variations occurred in the presence of a female or when the male was alone. The female showed no interest and might be at any angle relative to the male.

The majority of the Kentish Plovers were found concentrated in one area where hard sand, with a very thin growth of coarse grass was nearest to a shallow muddy reedy lagoon. In this more concentrated area the crouched running was common, but with closed wings and, as far as I saw, only by the males. Often one male would run directly at another, which struck the attitude and retreated a few yards, then turned to chase the first, which promptly retreated. After several reverses the to and fro rhythm was lost and the two males found themselves running at each other. Then they met in an aerial dance, breast to breast, springing about a foot into the air, six or eight times, finishing usually by both flying away. There were so many birds in a small area that I could not relate any particular male to any female. During such a dance no other bird nearby showed any reaction.

I think all the various performances were silent, but I cannot be certain that some of the calling in the area did not come from the displayers.

JOHN H. BARRETT.

ARCTIC SKUA IN HERTFORDSHIRE.

ON May 12th, 1946, at Wilstone Reservoir, Tring, Herts, I identified an adult Arctic Skua (*Stercorarius parasiticus*). This was first seen rapidly chasing a Common Sandpiper (*Actitis hypoleucus*), to within 20 yards of my position, apparently with the intention of catching it. It was unsuccessful but although the impact was not actually seen, a few feathers were seen floating down. The Skua ignored numerous Black Terns present, flew straight across the reservoir, and departed towards Dunstable

A. C. BRUCE.

BLACKCOCK DISPLAY.

THE following notes on Blackcock (*Lyrurus tetrix*) at the lek were made April 12th-28th, 1940, in Rothiemurchus, Inverness-shire, and are supplementary to my previous paper (*antea*, Vol. xxxii, pp. 290-303, 1939). At one lek with 12 mature males, the average size of each territory was 120 sq. yds. The lek was also visited by up to three immature males, but these, unlike the adults, were irregular in attendance. At the end of the display periods, when the males had folded their tails, they often wandered feeding over each others' territories, but during display periods each cock kept rigidly to its own ground, even when a hen was in an adjoining territory, unless, as noted previously, a male was actually copulating, when interruption by a neighbouring cock was not uncommon. On one occasion when the visiting hens were all near the centre of the lek, where they were vigorously courted, a cock with an outside territory went through the typical sexual display, circling with short, rapid steps and even tilting the tail sideways—to an entirely imaginary hen. This curious behaviour was observed only the once. Visiting hens normally alighted in the cover outside the lek and then walked in from the edges. The cock's "flutter-jump" accompanied by the crowing "tchu-wai" is particularly stimulated by the sight of a hen flying low over the lek. On one occasion a passing duck Wigeon (*Anas penelope*) evoked rather feeble flutter-jumping and crowing.

The stuffed hen bird used in previous experiments was set up at various leks on April 13th, 14th, 16th, 18th, 22nd, 24th, 26th and 27th. In April, 1938, it had evoked copulation, but in October, 1938, only mild alarm. In April, 1940, it evoked either mild alarm or was ignored, except on April 22nd, when it was vigorously courted and mounted by three males. Perhaps the cocks were more backward in April, 1940, than in April, 1938, and were not yet in the physiological state for copulation except at the one lek tried on April 22nd. In 1940 grey hens were visiting the leks April 18th-27th, and evoked flutter-jumping and circling, but not copulation. The stuffed hen primarily supplies a stimulus for copulation, and apparently the

cocks were not ready for this. Incidentally the stuffed hen has never evoked flutter-jumping, the latter being evoked by a moving hen.

DAVID LACK.

QUAIL CALLING IN FLIGHT.

AT midnight on May 27th, 1946, I heard a Quail (*Coturnix c. coturnix*) calling as it flew over Sherriffs Lench, Worcestershire. I believe that the Quail calling in flight has not been recorded in England often, though, according to *The Handbook*, it is not infrequent on the Continent. By an odd coincidence one was heard doing so at Bromsgrove, also in Worcestershire, at 3 a.m. on May 27th, 1943. (*vide Birmingham Bird Club Report*, 1943). A. J. HARTHAN.

GREAT SPOTTED WOODPECKER ATTACKING NESTING-BOX CONTAINING YOUNG BLUE TITS.—Mr. F. H. Johnston sends us particulars of a female Great Spotted Woodpecker (*Dryobates major anglicus*) which was seen on three occasions attacking a nesting-box containing young Blue Tits (*Parus cæruleus obscurus*) at Crab Hill, Beckenham, Kent, and enlarging the entrance hole. During the attacks on the box the tits repeatedly swooped down on the woodpecker, passing so close it that it had to "duck," and once one of the tits appeared to strike the woodpecker's head and made it fly off. The young tits were safely reared.

Some years ago we had a closely similar experience with a nesting-box containing young Blue Tits at Oxford and there can be hardly any doubt that in both cases the woodpecker was trying to get at the young birds. This species has actually been observed to take a young Blue Tit from a nest in Spain (see *antea*, Vol. xxiii, p. 131) and J. H. Gurney (*Zool.*, 1890, p. 435) has recorded an immature specimen shot in Hertfordshire which contained the remains of two or more young birds believed to be Blue Tits. There are other authenticated cases of Great Spotted Woodpeckers taking young of House-Sparrow, Tree-Creeper, House-Martin and Lesser Spotted Woodpecker.

EXCEPTIONAL PASSAGE OF BLACK TERNS IN MAY.—We have received particulars from a number of localities of a quite exceptionally large passage movement of Black Terns (*Chlidonias n. niger*) in May. If any readers have information on this subject which they have not yet sent us we should be very glad to have particulars.

LETTER.

OYSTERCATCHERS MARKED WITH COLOURED RINGS.

To the Editors of British Birds.

SIRS,—In the course of a study of the breeding population of Oystercatchers (*Hæmatopus ostralegus occidentalis*) on the islands of Skomer and Skokholm this year we have ringed a number of chicks with coloured rings. Though the main purpose of this has been to enable us to identify individuals locally, reports of any Oystercatchers bearing coloured rings which may be seen later in the year elsewhere would be of much interest. May I therefore ask readers of *British Birds* who happen to see any of these birds to make a note of the place and date and, where possible, of the colour of the ring or rings and which leg carries them. I should be most grateful for any such notes, which should be sent to me at this address.

E. J. M. BUXTON, Long Crendon, Aylesbury, Bucks.

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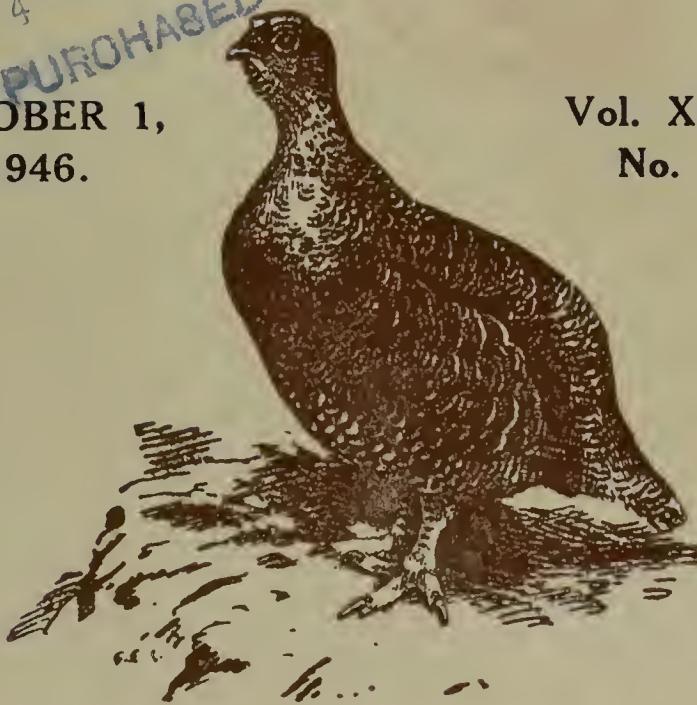
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ASSISTED BY

NORMAN F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

AND A. W. BOYD, M.C., M.A., F.Z.S., M.B.O.U.

CONTENTS OF NUMBER 10, VOL. XXXIX, OCTOBER 1, 1946.

PAGE.

Preliminary Observations on a Colony of Reed-Warblers. By Philip E. Brown	290
Gannets breeding in the Channel Islands : two new Colonies. By Roderick Dobson and R. M. Lockley	309
Notes :—	
Young birds returning to nest (Miss Vera Maynard)	313
"Anting" by Magpies (E. Reynolds)	313
Rose-coloured Starling in Nottinghamshire (J. Staton) ...	313
Courtship feeding of Greenfinch (Alwyne C. Wheeler) ...	314
Chaffinch and Tree-Sparrow wading and probing for food (J. Staton)	314
Yellow Bunting and Tree-Pipit laying in same nest (E. H. Parkhurst)	314
Notes on the song of the Black-headed Bunting (W. E. Almond)	315
Nuthatch feeding nestling Starlings (H. Powell)	316
Display-flight of Marsh-Tit (John Southern)	316
Evidence of part played by male Red-backed Shrike in site-selection (H. J. Hoffman)	317
Pied Flycatcher nesting in North Derbyshire (G. Ronald Pryor)	317
Song-period of Goldcrest (John H. Barrett, Major Robert F. Ruttledge)	318
Remarkable behaviour of Blackbird (R. E. Williams) ...	318
Redstart nesting in Co. Kerry (E. W. Pearce)	318
Unusual hunting behaviour of Peregrine Falcon (E. L. Roberts)	318
"Up-ending" by Redshank and Spotted Redshank (R. G. Adams)	319
Overlooked record of Kentish Plover in Middlesex (W. E. Glegg)	319
Lapwing's nest with six eggs (Gordon Douglas)	320
Water-Rail washing food (Rev. Cyril E. Martin)	320

Short Notes :—

Do juvenile birds survive less well than adults? *Correction.*
Blackbird singing in November. Herring-Gull nesting in Cheshire

320

PRELIMINARY OBSERVATIONS ON A COLONY OF REED-WARBLERS

BY

PHILIP E. BROWN.

I. GENERAL.

THE reed-bed (*Phragmites*) where the following observations on a colony of Reed-Warblers (*Acrocephalus s. scirpaceus*) were carried out is situated in the parish of North Cotes, Lincolnshire, immediately within the embankment marking the boundary between the reclaimed land and the tidal salt-marshes on the southern side of the Humber estuary.

The reed-bed is a very rough oblong in shape, approximately 450 feet in length and averaging 80 feet in width with two triangular extensions at one end. The total area of the reeds in 1945 was 4,930 sq. yards. In the autumn of that year, however, part of the northern end of the bed was burnt, and although new reeds grew up quite normally in 1946 no birds had nested in the burnt portion up to June 25th. The effective breeding area in the main bed was thus reduced by about 400 sq. yards. On the other hand a patch of reeds 54 yards south of the main bed, which in 1945 was less than 200 yards in extent and not used for nesting, had spread and thickened in 1946, covering only just under 300 sq. yards. A pair nested in this isolated patch in 1946.

In 1945 the reed-bed was watched jointly by Dr. R. T. Goodyear and the writer from May 12th, though planned observations were not started until May 20th. Thereafter the colony was visited almost every day by one or both of us until July 8th, when Dr. Goodyear left the district. I carried on daily visits until July 26th.

In 1946, though the period covered was much shorter, the whole of our time was devoted to watching the birds. Dr. Goodyear covered the period from May 29th-June 5th, when I took over and carried on until June 24th. W/Cdr. Peter Hill spent a good proportion of his time at the reed-bed from June 12th until the 23rd, but was mainly occupied in photography.

G.M.T. has been used throughout this paper.

2. POPULATION.

Neither in 1945 nor in 1946 was it known when the first Reed-Warblers arrived at the bed. But on May 12th, 1945, several cocks were in good song. In several cases closely watched in 1946 it was found that the cock generally occupied a territory from 3 to 7 days before being joined by the hen.

The following tables show the numbers of birds present in the reed-bed at various dates in 1945 and 1946. Only mated pairs with nests are shown for 1945.

TABLE I—1945.

Date		Building	With eggs	With young	Total pairs
May 25th	...	4	1	0	5
June 9th	...	6	4	0	10
June 21st		3	8	1	12
July 7th	...	1	6	5	12

TABLE II—1946.

Mated Pairs

Date	Mated Pairs			Unmated cocks in territory	Total	
	In territory	Build- ing	With eggs	With young	♂	♀
May 31st	1	3	3	0	1	8 7
June 8th	2	3	7	0	2	14 12
June 12th	1	12	2	0	1	16 15
June 18th	0	1	11	1	2	15 13
June 24th	0	2	12	1	2	17 15

It must be emphasized that the figures given refer only to the situation in the reeds. It is impossible to get anything more than an *impression* of the distribution in the adjoining fields, which are freely used by all the birds for feeding. On several occasions between June 13th and 20th, 1946, a cock sang fairly persistently in a field immediately adjoining the reeds. This field was growing a clover crop, but had borne wheat in 1945 and several small patches of the corn had sprouted up among the clover. The cock sang from two of these clumps, both over 100 yards from the reeds, and as the clumps appeared thick enough to harbour a nest, a careful but fruitless search was executed. This factor of birds of either sex being present in the immediate vicinity of, but not actually in, the reeds very possibly accounts for the decline in the population figures between June 12th and 18th, 1946, an hypothesis which tends to be substantiated by the figures for June 24th.

The figures in the 1945 table, including only mated pairs with nests, are not of great significance, but have been given because they confirm the 1946 results in so far as they show that probably less than half of the final number of birds arrive at the reed-bed during May. Howard (1907-14), writing of this species, says that "the migratory movement as a whole is peculiarly erratic and somewhat difficult to understand; not that the time of advent of the first males varies very much, but that males and females intermingled continue to arrive, and to pair so long as there is sufficient territory, for some weeks after the arrival of the first male." The same authority goes on to say that birds arrive "even as late as the 21st June," although he very rightly points out that these later birds are not necessarily migrants in the generally accepted sense of the word, but may be wanderers from pool to pool in search of a territory or a mate.

3. TERRITORY.

TABLE III.

No.	Dates	Approximate area of Territory in sq. yards
1	June 8th-24th	448
2	June 1st-24th	440
3	June 7th-24th	285
4	June 6th	490
	June 12th	320
	June 24th	240
5	June 12th	140
	June 13th	(lost to No. 9)
6	June 12th	130
	June 13th	(lost)
7	June 8th	250
	June 12th	195
	June 18th	60
	June 22nd	(finally lost)
8	June 8th	344
	June 12th	320
	June 18th	130
	June 24th	110
9	June 12th	170
	June 15th	440

The above table is based upon close observation of nine cock birds during three weeks in June, 1946. My definition of territory for the purpose of this table is that area in which a cock moves *and* sings freely without being chased away by another bird. It should be stated that in several cases there was a slight but quite obvious overlap in territories. In this "neutral" ground both cocks sang, the one in "possession" at a given time almost always provoking song by the other bird, but not being chased away.

The first three examples in the above table are of birds which appeared to hold their territory fairly easily. The first bird had a territory at the south-east corner of the main bed; the second held a triangular territory in the north-east corner, separated from the main bed by the area of burnt reeds already mentioned; the third occupied the isolated patch of reeds to the south of the main bed.

The fourth example is interesting because it shows very clearly the diminishing size of the territory following the influx of new birds early in June. On June 6th the only nests near the one belonging to this cock were 19 yards W.N.W. and 21 yards S. On the 11th a cock took up a territory and sang irregularly about 10 yards

N.N.E. of this nest. On the day following, this cock, still unmated, made repeated sallies into the territory previously held undisputed by the nesting pair, which had four eggs, the last laid on June 6th. The following extracts are from field-notes :—

" 12.27-12.55. Terrific singing from another cock 12 yards or more N.N.E. My cock sang vigorously but rather sporadically, mainly low in the reeds (2 ft.) near the nest, but once two yards S. and once 6-7 yards S, also twice 1-2 yards N.W. The other cock sang as persistently as I have ever heard a Reed-Warbler sing for 10 minutes. . . if there were brief pauses they were not noticed. After about 15 minutes there was quite a flurry when the unmated cock came within three yards of the nest from the N. and sang for a full minute. My cock sang back from beside the nest and his hen, off the nest at the time, was flying around. The unmated bird was chased off N.E., and the hen returned to brood. Only the hen brooded during this period, in spells of $2\frac{1}{2}$ ($3\frac{1}{2}$ off) 7, (5), and 10 minutes.

16.37-17.40 Towards the middle of this period the unmated cock, which had been singing 10 yards N. came singing to within two feet of the nest. At 17.30 there were scufflings within two or three yards of the nest and, apparently, intruding cock retired in silence. Both cocks sang tremendously and there were spells of three minutes without a pause and up to ten minutes with only slight breaks of 15-30 seconds."

From that evening the mated cock never sang more than a few feet N. and N.E. of the nest, and the unmated bird took over a large portion of the territory previously occupied by him, singing without dispute as near as 2-3 yards N, though on coming closer he was always successfully chased off by the paired cock if he was in the vicinity of the nest.

During the next three days further territory was lost to the pair, already mentioned, nesting 19 yards W.N.W. The cock of this pair extended his territory to within six yards of the nest of No. 4, whose territory, now roughly in the shape of an equilateral triangle with the nest very close to the apex, was reduced by half in ten days.

Examples 5, 6 and 7 in the table are of paired birds which lost the whole of their territories to intruding cocks. No. 5 is particularly interesting. A paired cock took up a small territory in reeds at the N.W. corner of the bed, separated from the main reeds and the territory of another paired cock by a narrow strip of grass and sedge. On June 11th the two cocks spent much of the day singing against one another from either side of the dividing strip. Late in the afternoon of the 12th, No. 5 pair started building their nest, but the other pair (No. 9 in the above table) did not do so until the following day, when the cock took over the whole territory of No. 5, his mate stripping down their half-built nest in the course of the afternoon and using the proceeds to construct her own nest inside the original territory of her cock. (See Section 10). It may be added that No. 9 cock not only took over the territory of No. 5, but also

extended his territory elsewhere, so that, before the nest was completed, he occupied an area two-and-a-half times the size of his original one.

No. 6 lost a small territory and a half-built nest on the same day. No. 7 is a most interesting case. This cock was joined by a hen on June 8th, the nest being started either late that evening or early the next morning. The building activities proceeded normally until the morning of the 10th, when an unmated cock started to intrude into the territory from the N., singing persistently within 10 yards of the nest. During most of that day and the following morning the owner of the territory sang against this rival bird and his hen was also present in scuffling flurries in the reeds which occurred frequently. The building of the nest was abandoned for over twenty-four hours, not being resumed until early on the afternoon of the 11th, the rival cock then having quietened down considerably, but having gained some 50 yards of territory.

The first egg was laid in No. 7's nest on the 15th, and the next two followed normally on the two following days, when the rival cock again became very persistent in his song and in his intrusions into the territory. The hen of No. 7 then paired up with the intruding cock, which gained more territory. On the morning of June 20th this pair began nest-building only $3\frac{1}{2}$ yards N. of the hen's first nest, in which her original mate was still occasionally brooding two remaining eggs. This state continued until the morning of the 22nd, when No. 7's nest was found to be empty; the remains of his territory having been taken over by the intruding cock.

The final example in the table (No. 9 having already been mentioned above) is No. 8, a complicated case, the final history of which is unfortunately incomplete. Nest-building was going on between June 8th and 12th, and during this time a small portion of the reasonably large territory was ceded to another cock establishing himself to the S. On the 16th, the day on which No. 8's hen laid her first egg of four, a new cock occupied a territory ten yards S.W. and the usual "song-duels" began, with the unmated cock steadily extending his territory towards the nest of No. 8. I am not certain when this new cock obtained a mate, but he was first seen with a hen on the afternoon of the 18th, by which time his territory extended to within 3 yards of No. 8's nest on the W. side. The intruding pair began building their nest on the afternoon of the 20th. On the morning of the 22nd I found only one egg left out of the four which had been laid in No. 8's nest. There was much singing and a great deal of scuffling going on in the reeds near the nest, in which three or perhaps four birds were engaged. I moved a hide into position 3 ft. W. of the nest, and during the course of the day the intruding pair came freely to the hide, the hen taking lengths of Hessian from it and using them in the construction of her nest.

It is interesting to notice the fact that the territory may be subject to a very drastic reduction in size while a pair are breeding. The only three birds which maintained their original territory were

apparently well-situated to do so, two being separated from the main bed and the third occupying a triangular territory in a corner only one side of which had to be defended against possible intruders. In one case an entire territory was taken over in a matter of hours (No. 5), but usually the encroachment was fairly gradual. Often, but not always, the encroachment into the territory ultimately proved fatal, but this, rather naturally, appeared to depend very largely upon whether the actual site of the nest could be retained or not. But another factor, discussed more fully in Section II of this paper, is that the hens are not always faithful to the cocks after pairing has taken place. An unpaired intruding cock may not only gain a portion of another's territory, but his hen as well; and this inconstancy on the part of the hen may occur some days before her nest, with her own eggs in it, is incorporated in the territory of the intruding bird.

Of all the cocks watched in 1946, only one had a territory which extended beyond the reeds. This substantiates the conclusions from rather more superficial watchings in 1945. It was not until near the end of the first week in June, roughly co-incidental with a marked increase in the number of birds present, that the Reed-Warblers were noticed to be feeding in the adjacent corn and clover fields and in rushy ground to the S. of the reeds. With the exception of one cock, already mentioned in Section 2, which sang sporadically for a day or two in the clover field, there was nothing to indicate any hostility between the feeding birds, three or four of which would often be searching for food quite close together, but apparently regardless of one another. Furthermore, it was a striking fact noted on many occasions, that when an intruder was being chased out of a territory, he would fly straight to the edge of the reeds and then turn at right angles down the bank to his own territory, the pursuing bird always abandoning the chase at the edge of the reeds almost as if he were on an invisible leash.

Lack (1946) has mentioned a similar case of a bird feeding outside the territory, but it is not confined only to birds with young, although probably the feeding-area is of necessity extended at this phase of the breeding-cycle. The feeding-areas, as distinct from the territories, in which the birds also fed, were ascertained for four pairs in 1946, and may be summarized :—

- (1) June 10th-12th. Pair building. Territory, 440 sq. yards. Feeding-area, 190 sq. yards.
- (2) June 22nd. Pair with eggs in early stages of incubation. Territory, 285 sq. yards. Feeding area, 576 sq. yards.
- (3) June 12th-17th. Pair with eggs incubating. Territory, 450 sq. yards. Feeding-area, above 500 sq. yards.
- (4) June 24th. Pair with half-fledged young. Territory, 240 sq. yards. Feeding-area, 5,200 sq. yards.

4. NEST-BUILDING ACTIVITIES.

The unpaired cock bird, on taking up a territory, usually and perhaps invariably, builds what can, I think, be justifiably described as a "cock" nest. Sometimes these "cock" nests are nothing more than three or four wisps of fine moss and dead reeds, woven around one or two reed-stems; some are more ambitious, the weaving being continued with more material until there is a rough untidy platform between the suspension-points; occasionally this stage is carried a step further, the platform being worked up into the preliminary cup-shape characteristic of a half-finished nest, although the work is rougher and much less tightly-woven than a true nest at the same stage. In 1946 I watched two nests carried to this third or half-cup stage. Whether the cock can carry the building further than this I do not know. In July, 1945, a lone cock took up a territory, and a fortnight later a perfect nest, without eggs, was found in his territory, though he was at this time unmated. But before attributing this nest to him I should like to be sure that he did not for a few days obtain a mate, losing her again after the completion of this nest.

"Cock" nests were found in the case of seven different birds in 1946. In all of the three cases in which a close watch was kept on unpaired cocks in territories, a "cock" nest was found. In two other cases the real nest was built on the site of the "cock" nest. In both of these cases the "cock" nests had been developed into the platform stage mentioned above, and the true nests were built immediately above them, so that in each case the final nest looked like a very deep structure with a double-set of suspensions to the reeds. But the two nests were not woven together at all, and in one case it was found to be possible to slide the lower "cock" nest gently down the reeds, leaving the true nest absolutely intact and secure. In all the other cases the true nest was built at distances varying from 3 ft. to $10\frac{1}{2}$ ft. from the "cock" nest, and the latter was invariably stripped down as soon as the former one was begun, though whether by cock or hen or both, I cannot say. One more case must be mentioned in some detail. A cock took up a territory on June 1st, and on the 6th a search revealed a rudimentary "cock" nest, in the immediate vicinity of which the bird did most of his singing. On the 7th he was joined by a hen, but on the evening of the following day, contrary to the normal course of events, the original "cock" nest was still intact and there was no trace of any other. On the morning of the 9th, however, I found that the original "cock" nest had been removed and a rudimentary nest started 8 ft. away. At the time I assumed this was the start of the true nest, though neither bird did any building during the few minutes I watched them, the hen, in fact, following the singing cock all round the territory and down to the nest several times. On going to see if any progress had been made by late afternoon, I found this rudimentary nest had been removed and another started $4\frac{1}{2}$ ft. away. This third start

proved to be that of the true nest, and the following day the hen began building in earnest.

Apart from the fact that these observations of "cock" nests appear to be original for the species under consideration, I have discussed them at some length because they indicate with a reasonable amount of certainty that the final selection of the nesting-site rests with the hen bird.

The building of the true nest appears to be, to all intents and purposes, wholly the work of the hen. In 1945 I once saw both birds carrying material to the vicinity of the nest, but it is possible that the cock was carrying his piece about with him all the time. In 1946 I watched many nests under construction at close range, and the cock merely accompanied the hen to and fro on her journeys for material, usually singing in the reeds above the nest while she was weaving her material into the structure. I have, however, two records of cocks bringing wisps of material and laying them loosely on the rim of the nest, one case occurring after the laying of the first egg.

In June, 1946, I watched six nests constructed from the earliest stages, three of them from the first two or three strands. At the start a few dead reed-leaves, usually six or seven in number, were woven rather loosely round from three to five reed-stems. These formed a tenuous and not very stable platform. The hen now proceeded to obtain strands of a very delicate, hair-like moss, in lengths of from three to eight inches or sometimes longer, these being very lightly woven into the upper side of the reed platform. A sort of pad or cushion of extreme lightness was thus formed. Large beakfuls of mossy material now began to be brought and laid on the platform, and dried grasses, reed-leaves and sedges were woven round the outside of this mossy lump, thus forming the lower outside portion of the cup. At about this stage the main suspensions were put in, usually considerable lengths of dead reed-leaves. These would be woven to a reed at about the height the nest rim would ultimately reach, then pulled down and worked through the rudimentary cup structure, and the other end woven round another reed or reeds. These suspensions varied considerably in both the amount of material used and in the skill with which they were woven; the ability of the finished nest to withstand severe gales and rain appeared to depend very much upon them. They were normally hidden in the complete structure, the outer strands of the cup being carried round outside them, and often, incidentally, around reed-stems from which there was no real suspension.

Thereafter the cup was continued in the same way, less moss being used than hitherto. The original basal platform nearly always fell away within a few days, and in rough weather often within twenty-four hours, giving the underside of the nest a shaggy and untidy appearance. In every case the nests were lined with dead reed-heads, usually arranged in crossed spirals.

Excluding odd bits of material which may be added by either bird of the pair up to and even after the laying of the first egg, a series of ten nests averaged $4\frac{1}{2}$ days in construction, the maximum being $6\frac{1}{2}$ days in one case and the minimum 3 days in three cases. It may be mentioned in this connexion that rain puts a complete stop to nest-building activity, and a spell of fairly continuous wet weather might extend the building period considerably.

Nest-building goes on during all hours of daylight. If anything, the records show a slight balance in favour of the busiest period being in the late afternoon and evening. More significant is the certain fact that the hen works hardest and longest during the earlier stages. This may well be connected with the fact that the basal platform already mentioned is very frail and tenuous, liable to disintegrate very soon, especially in rough weather.

In 1946 measurements were taken of 19 of the nests which had been constructed up to June 24th. These averaged 25 inches above the water, measured to the rim of the cup, the extremes being 44 and 11 inches respectively. Two nests were built over dry ground, but the average depth of water below the nests was 4 inches, the maximum being just over 11.

The following table summarizes the measurements of the 19 nests. I have also included for comparative purposes the measurements of two nests of the Sedge-Warbler (*Acrocephalus schanobænus*) and two of the Whitethroat (*Sylvia c. communis*). I have added these last two because, curiously enough, so good an authority on warblers as Howard (*ibid*) queries what might happen to fledgling Reed-Warblers if their nest were no deeper than that of a Whitethroat, when in point of fact that is exactly the case!

TABLE III.
MEASUREMENTS OF NESTS (IN CENTIMETRES).

		Overall width	Width of cup	Depth of cup	Overall depth
<i>Reed-Warbler</i>					
Maxima	...	8.9	5.2	6.4	14.0
Average...	...	7.8	4.8	5.3	8.5
Minima ...	...	7.0	4.1	4.5	6.3
<i>Sedge-Warbler</i>					
Nest No. 1	...	11.0	5.2	6.1	9.8
Nest No. 2	...	9.5	6.0	4.5	7.0
<i>Whitethroat</i>					
Nest No. 1	...	9.5	5.6	6.0	9.2
Nest No. 2	...	9.4	6.6	6.6	9.2

The suspension of the nest is usually from three points, but varies from two to five, and it is not always the nests with most suspensions that fare best in stormy weather. Each suspension point may be attached to from one to three reeds, the total number of reeds involved in supporting a single nest being between three and seven or eight.

Out of 17 nests examined for the purpose during May, June and July, 1945, seven were suspended from new reeds only, eight from a mixture of new and old, and two from old reeds alone. It is curious that Howard (*ibid*) reports that he only found one nest suspended from both new and old reeds. He suggests that such an arrangement presents a real danger to the eggs or young, owing to those suspensions on the new reeds rising as they grow, the other suspensions not always sliding up the old reeds to counteract this, so that the nest tilts to an alarming degree. But he produces no evidence to sustain such an argument, and in my experience the tilting so produced, seldom amounting to more than ten to fifteen degrees from the horizontal plane, is quite insufficient to warrant such an assumption.*

5. LAYING OF EGGS, CLUTCH-SIZES AND ATYPICAL EGGS.

Out of 172 eggs laid while the reed-bed was under observation, it was known for certain that 67 were laid at intervals of approximately 24 hours from the laying of the previous egg. This was, in fact, nearly fifty per cent. of the possible cases, as no such calculation can be made for the first egg of the clutch. There was no evidence to show that this interval was ever departed from. On June 15th, 1946 an egg was laid some time between 03.40 hours and 08.50 hours. On the 18th no less than nine hens were laying, the nests being inspected between 05.55 hours and 07.30 hours; in each case the egg due for that day had been laid. I can quote only two significant exceptions to this early laying, both of which (probably merely through coincidence) were the last eggs of the respective clutches. One of these was laid after 12.00 hours, and the other was laid between 10.15 and 14.00 hours.

Out of 38 clutches for which full information was obtained, 5 consisted of 3, 28 of 4, and 5 of 5 eggs. Superficially this appears to give a perfect average of four eggs to the clutch, but I am not satisfied that the clutches of three eggs were complete. During 1945 and 1946, a total of six clutches of three eggs were found. For two of these clutches, laid in 1945, there is no other evidence that they were incomplete except that they both lacked an atypical egg (*vide infra*). Of these two clutches, one was successfully hatched, the other disappeared from the nest on the fourth day after the third egg had been laid. For the three clutches of three eggs laid in 1946 rather more conclusive evidence is available, apart from the fact that they also lacked the atypical egg. In one case positively and in the other two cases reasonably certainly the hens deserted the cocks, pairing up with another bird shortly after the

* Since the above was in type my attention has been drawn to a note by A. W. Boyd (*antea*, Vol. xxvi, p. 222), who expressly records his experience that "where old and new reeds are selected to support a nest (as occasionally happens) the growth of the new reed makes the nest lop-sided and the young have great difficulty in staying in the nest." It thus appears that the effect varies in individual cases.

third egg had been laid. Details of these three cases of desertion by the hen will be found in Section II.

A careful examination of the eggs in a single clutch usually reveals that they are all slightly different, one of them, the so-called atypical egg, very markedly so. (I am excluding from consideration at the moment the five clutches of three eggs, not one of which contained the atypical egg, and for which I have already given some evidence to suggest that they were incomplete). In that variety of the eggs which has the distinctive brown cap at the broad end, two clutches occurred in which this cap extended almost halfway down the shell of the first two eggs laid, but had receded considerably in the third egg and was absent entirely from the fourth and last one. Where a variation was noticeable, the tendency was for each succeeding egg to become slightly less heavily marked. It is only necessary for this slight change (due presumably to less pigments being supplied to the shell of the egg during its passage down the oviduct) to be suddenly exaggerated to produce the final and more markedly different egg.

The markedly atypical egg *appeared always to be the last of the clutch*. In 1946 it occurred in all clutches (16) above three eggs. It is always a lighter egg and sometimes noticeably larger (apart from the obvious optical illusion). It may be pointed out, however, that the difference between it and the other eggs tends to diminish somewhat during incubation, possibly due to dirt, but never to such a degree that there is any doubt in distinguishing it. It obviously has very real value in assessing incubation periods. It is curious that the allusions in the available literature to this atypical egg appear to be almost negligible; it does not seem to be mentioned either by Howard (*ibid*) or in *The Handbook* (Witherby *et al.* 1943), though its occurrence is obviously well known to many ornithologists.

6. SHARE OF THE SEXES IN INCUBATION; PERIODS ON THE NEST.

My results in 1946 can be conveniently shown in tabular form:—

TABLE V.

INCUBATION ON 3RD AND 4TH EGGS OF CLUTCHES.

Total period in minutes	Number of nests watched	Male %	Female %	Nest vacant %
345	5	19	40	41
INCUBATION ON DAYS FOLLOWING THAT ON WHICH CLUTCH COMPLETED.				
473	2	25	64	11

The above table deals only with cases in which the breeding activities appeared to be progressing satisfactorily. Cases in which the nest of a pair was about to be swamped in the expanding territory of a neighbouring cock, or in which hens were enticed

away by another male, have purposely been excluded, and will be mentioned later.

It will be immediately apparent that the share of the cock, although considerable, is very much less than half that of the hen. Hosking and Smith (1943) appear to suggest that in a case which they watched closely the periods of incubation were divided more or less exactly between the sexes. It is a pity that they did not give detailed figures, for in the only spell quoted the hen incubated 28 minutes as against the cock's 17, which seems to be much nearer the average.

Normally the birds incubated in turn, but this was by no means an invariable rule, the hen sometimes doing a series of spells by herself, with comparatively short intervals of three to five minutes off the nest when she was presumably feeding. (In almost all these cases in which the male did not take his regular turn he was engaged in "song-duels" with another cock). The spells on the eggs of the males averaged 7 minutes, with a maximum of $12\frac{1}{2}$; of the hens, $11\frac{1}{2}$ minutes, with a maximum of 26.

7. PERIOD OF INCUBATION.

Although in 1945 eight nests were watched from the laying of the eggs until the hatching, the fact that the inspections were usually twenty-four hours apart renders the results of little significance. One clutch only hatched out during the period in 1946 that the birds were under observation. This was a clutch of four, and, assuming for the moment that incubation began after the laying of the third egg, the periods are as follows :—

1st, 2nd and 3rd eggs laid. One egg hatched after 11 days 2 hours (possible error, nil); another after 11 days 6 hours (error, nil); the third egg did not hatch, but was subsequently found to contain an almost fully-developed embryo.

4th and last egg of clutch (atypical). This egg hatched during the night or very early in the morning. Period, 11 days 21 hours (error 5 hours).

It was established with reasonable certainty that, with a normal clutch of four eggs, steady incubation begins very shortly after the laying of the third egg. But as the whole matter of incubation-periods will have to be closely studied in 1947, it is considered advisable to discuss this aspect of the subject in a future paper.

8. FLEDGING-PERIODS : BEHAVIOUR OF BIRDS WITH YOUNG.

The disadvantages of a daily inspection in assessing incubation-periods is even more manifest when it comes to assessing fledging-periods. For in the former case the error is confined to the hatching end, as it is known that eggs of a clutch are laid soon after sunrise on consecutive days; but in the latter case there may be an error approaching 24 hours in the hatching-time and an equally large error in the fledging-time, and as the errors may be cumulative, the final error may spread over nearly 48 hours. To quote a series

of fledgling-periods with the proviso of a possible error of 24 hours either more or less is of dubious value.

Only one pair of birds has so far been watched closely for considerable periods in the early stages of the fledgling-period. Table VI summarizes the share of the parent birds in brooding the young during the first four days from hatching:—

TABLE VI.

No. of young	Hrs. since 1st egg hatched	Period	Male	Female	Nest vacant
2	4½	1310-1340	6'	23'	1'
3	33	1725-1805	9½'	27'	3½'
3	52½	1305-1353	8'	35'	5'
3	80	1530-1700	Nil.	c. 60'	c. 30'
3	103	1445-1520	Nil.	8'	27'

Both birds brought food for the young, but the cock most often, as the hen was doing a far greater proportion of brooding. No case was observed of the cock begging food from and being fed by the hen while brooding, a circumstance recorded and photographed by Hosking and Smith (*ibid.*), but probably a rare occurrence. When the cock returned with food, the hen would raise herself in the nest and, with fluttering wings and up-pointed, wide-open beak, beg from him. Sometimes the cock would pass some of the food to her, whereupon she would re-feed it to the young in the usual way; but as often as not the cock would appear indifferent to her solicitations, passing the food direct to the young under the flank of the hen. On these occasions she would peck some food out of his beak, and on two occasions the cock immediately pecked at her bill and took back all or most of what she had taken from him!

On hatching, as a general rule, the shell is split into two roughly equal halves. These are removed by whichever bird happens to be brooding at the time. A search was made in the direction in which the hen had flown off with one half of a shell, and it was found dropped in the reeds 22 feet from the nest. The smaller fragments of shell are eaten by the sitting bird.

With regard to the removal of the faecal sacs, the rule appeared to be quite invariable during the first four days, at least, in the pair studied; the hen always swallowed them at the nest, while the cock always took them in the tip of his bill and flew right off with them.

9. SONG.

The following points supplement the brief account given in *The Handbook* (Witherby *et al.* 1943). In the first place the description of the carrying power of the song as much less than the Sedge-Warbler's might be taken as implying that the range of audibility is less than in fact it is. Probably this is accounted for by the fact that birds often sing from low in the reeds. It must be obvious that a

bird singing at a height of two feet in extensive and thick reeds five or six feet in height will have its voice very effectively blanketed out in a horizontal plane. But if a bird is in full song near the top of the reeds, it is quite clearly audible at a distance of 500 yards in still air.

The song, too, can be divided into two distinct types, differing very markedly in strength and usually noticeably in *tempo*, although the simple notes remain more or less unchanged. The first type is the conversational warbling, lasting usually from 15 to 30 seconds, with an interval of anything from a minute or two to half-an-hour or more between each burst. It is uttered by the cock as he flits about the territory, but is most frequent in the vicinity of the nest. The second type, associated with a cock taking up a territory or with territorial "pressure," is uttered at a rather faster speed and is *very much* louder. At times it is continuous over several minutes, as far as the ear can detect, and on several occasions I have heard it kept up for as much as ten minutes or more with only two or three detectable pauses of a few seconds only.

Song at night is even more remarkable. On several occasions it had been noted that the birds became very quiet soon after sunset and by the end of the twilight they were silent. Hill and the writer spent the night of June 14th-15th at the reed-bed. The following extracts relevant to Reed-Warbler song are from my note-book:—

- 2200. 15 second burst.
- 2250-2300. Four bursts, 5-15 seconds.
- 2325. 5 second burst.
- 2326. 1 second burst.
- 2230. Bird sang loud and continuously for 10-15 seconds.
- 2330-0005. 20 short bursts of 1-5 seconds duration recorded from at least three different birds.
- 0005-0038. 20 more short bursts recorded.
- 0038-0045. 20 short bursts, but some up to 15 seconds.
- 0045-0055. Two or three birds now in almost continuous song.
- 0055-0200. Intense and continuous song, never less than three birds at any moment, and often seven or eight or more.

Although it is a difficult matter to gauge correctly, Hill agrees with me that there is almost certainly more song between a little after midnight and sunrise than in all the rest of the 24 hours put together. It is curious that there is so little up to midnight, but as the birds come into full song shortly afterwards it cannot be described as a "dawn" chorus, for the increase in the amount of light between midnight and 45 minutes afterwards in this latitude in June is negligible. It may be noted that the five or six pairs of Sedge-Warblers (all but one pair had young in the nest) were silent during the night.

Cocks almost invariably sang a short burst immediately before arriving at the nest for a change-over during incubation. But they also sang near the nest when accompanying the hen during building operations, and also when visiting the nest after completion, but

before the eggs were laid. Singing by the cock while he is incubating is also not at all infrequent, but appears only to occur when provoked by the near approach of another singing male; and if the intruding male continues to sing or comes even closer, the cock will almost invariably leave the nest to sing near him or chase him away.

A short burst of song by a hen, in no instance more than five seconds in duration, was recorded six times from four different birds in 1946. On five of the occasions it was uttered by the bird just before or on leaving the nest while incubation was in progress. Eliot Howard mentions occasional song by the female.

10. STRIPPING OF NESTS.

In 1945 Dr. Goodyear and the writer were at first completely nonplussed by the complete disappearance of a nest within 48 hours. It soon became obvious, however, that the birds were stripping these nests themselves and often, if not always, building them elsewhere. Due to the time factor, observations in 1945 were too superficial to decide with certainty whether or not it was the original pair or another which stripped the nest. On the evidence available it appeared that sometimes it was the same pair, sometimes a territorially-intruding pair.

In 1946, several more nests were stripped. One of these occurrences was closely observed from a hide, and as the record appears to be unique, I will quote from my field-notes for June 13th:—

- 1122. Hen to nest with beakful of material. (Cup of nest is half-finished).
- 1125. Hen to nest with small beakful of moss, which she tucked, rather oddly, into bottom underside.
- 1133. Hen (?) flew to reed above nest, darted down, seized some sizeable shreds from the nest and flew off S.E. Cock immediately burst into song for 12 seconds two yards S. of nest. (I do *not* think this was the nest-building hen, as she always approached the nest low in reeds).
- 1135. Hen inspected nest.
- 1137 $\frac{1}{2}$. Hen inspected nest, followed by cock with crown feathers raised.
- 1205. Twice since last entry intruding hen has taken material and flown off S.E. Went out of hide and watched from bank and saw intruding hen thief again. I went to the spot she flew to, some 10 yards S.E. and found a nest obviously started this morning.
- 1220. In hide again.
- 1225. Hen stole again, arriving with "churr-churr."
- 1227. Ditto.
- 1231. Building hen brought material to nest and cock sang short burst from reed above.
- 1233. Hen stole again.
- 1239. There has just been a great flurry of two or three birds at the nest, followed by chasings and scufflings in the reeds.



REED-WARBLER : NEST PARTLY STRIPPED AND MATERIAL USED FOR CONSTRUCTION OF A NEW NEST BELOW IT ; PHOTOGRAPHED AFTER ABANDONMENT OF THE SECOND NEST.

(Photographed by Peter Hill).

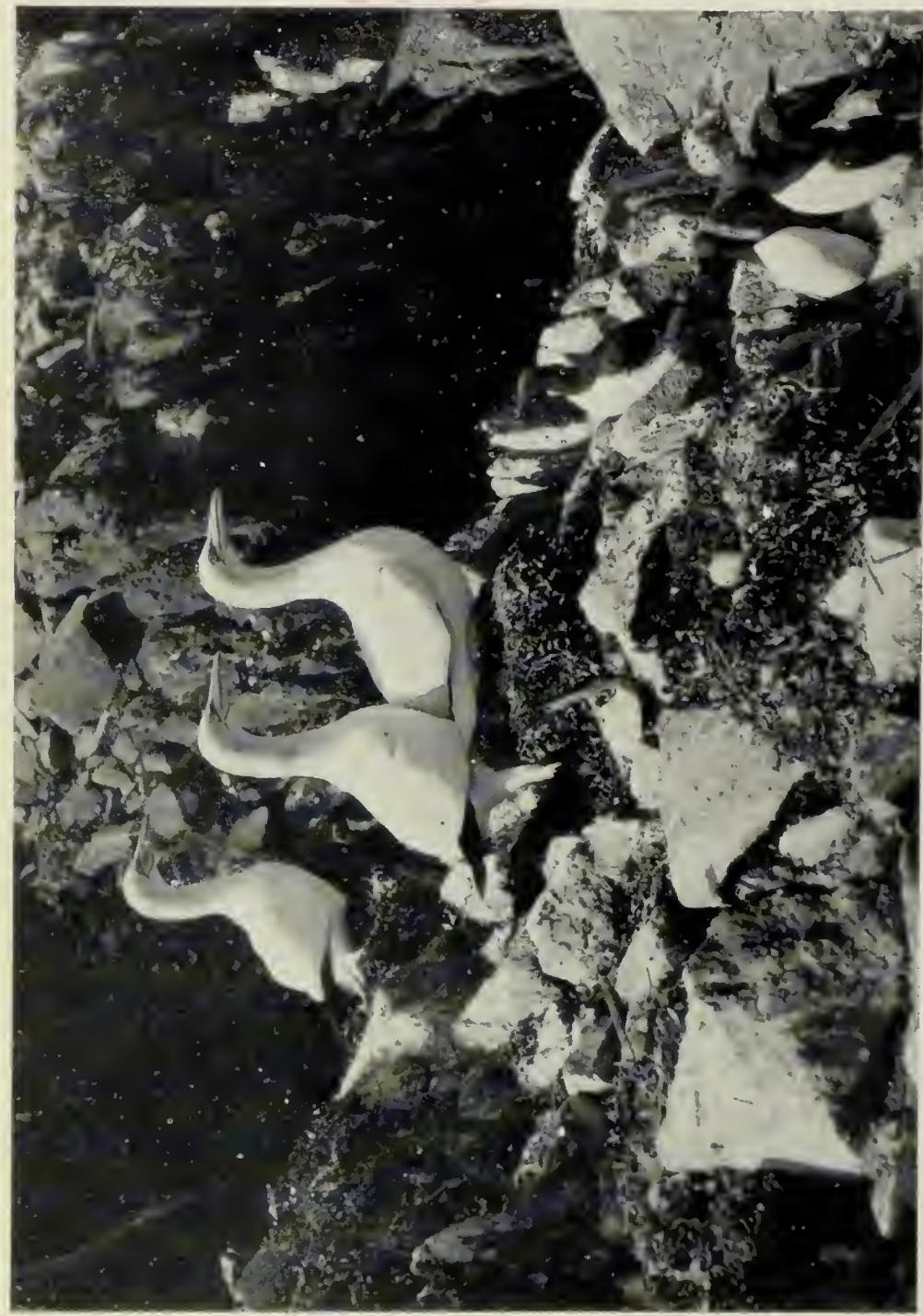


REED-WARBLER : MALE COMING TO NEST DURING THUNDERSTORM.
(Photographed by Peter Hill).



REED-WARBLER : MALE SHELTERING INCUBATING FEMALE DURING THUNDERSTORM.

(Photographed by Peter Hill).



NESTING GANNETS ON THE WESTERN STACK OF LES ETACS.



ORTAC : EAST SIDE, SHOWING MAIN PART OF NEW GANNETRY
(Photographed by R. Dobson).



UPPER—LES ETACS, SHOWING SITE OF NEW GANNETRY; WESTERN EDGE OF ALDERNEY IN FOREGROUND.

LOWER—MAIN GANNET COLONY ON NORTHERN SLOPE OF THE WESTERN STACK OF LES ETACS.

(Photographed by R. Dobson).

From that time on the intruding hen stole freely, her own cock accompanying her and singing above the nest as she stripped it. Once or twice the old owners appeared in the vicinity of the nest, but the cock was always chased off easily by the invading one. By nightfall only a few shreds of the nest remained; in the morning no trace was left and the hen had started to purloin shreds of Hessian from the hide and was making good use of them in her building.

In other cases which could not be closely watched the situation is less certain. In one case it is reasonably certain that a solitary cock enticed the hen away from another, and the hen stripped down her first nest and rebuilt it in the territory of her new mate. In future work it is intended to insert variously-coloured wools in the nests, so that when they are stripped it can be easily and certainly ascertained where they have been rebuilt. Normally the "rebuilt" nest is within ten yards of the stripped one, although one case, not definitely established, suggests that it may occasionally be removed considerably further. Sometimes it is only moved a very short distance, and in 1945 we had one case where it was stripped and rebuilt about a foot below the original one. The stripping was, in this case, incomplete, as not only did part of the old suspensions remain, but material trailed down and was woven into the new nest. Some weeks after this second nest was abandoned, and when it had slipped away on one side, Hill took a photograph of it (Plate 37).

II. "ENTICEMENT" OF HENS.

I have purposely used the word "enticement" in inverted commas because it cannot be proved that cocks do entice hens away from their original partners. In one case absolutely certainly, however, and in two cases fairly certainly the hens deserted their cocks for new mates.

Considering the fairly certain cases first. In one case a nest with an incubated clutch of four eggs was found empty. An unpaired cock nearby then became mated and sang "against" the cock whose nest was empty and who was now no longer seen with a mate. The mated cock "intruded" into his territory until the area around the empty nest was included in it. The nest was then stripped down within 48 hours, coincidentally with the building of a nest in the lately paired cock's original territory. In the second case a hen had laid three eggs, but, as none were atypical, the clutch was presumably not complete. On the following day no further egg was laid, the cock alone was sitting on the eggs, and the hen was spending a great part of her time in the territory of a neighbouring cock. By the following day she had deserted him entirely and began building a nest in her new mate's territory, in which she subsequently laid four eggs, including the atypical final one.

The third case, which was watched throughout from a hide and is completely authenticated, may be given in fuller detail, especially as the behaviour of the cock bird was interesting. Here again three eggs had been laid by the hen, none atypical. At this time (June

16th) a cock, unmated, took up a territory adjoining the one in which the nest was situated. Incubation on the evening of the day on which the third egg was laid appeared normal, for in a watch of 58 minutes, the cock sat for 9, the hen for 21, and the nest was vacant for 28 minutes. On the following morning, as no fourth egg had been laid, a watch of 96 minutes was kept and it was immediately apparent that things were no longer running smoothly, for in this period the cock sat for 55 minutes, the hen only for $8\frac{1}{2}$, whilst the nest was vacant for $32\frac{1}{2}$ minutes. The intruding cock was singing very persistently, often close to the nest, and there were frequent scufflings in the reeds, in which all three birds were engaged. During a 50 minute watch in the evening the nest was empty for 39 minutes, the cock sitting for nine and the hen only for two minutes.

The next day, June 18th, the hen was observed to sit on the eggs for a short spell in the morning and once in the late afternoon, but she would always fly off when the intruding cock approached in song. She was never observed to sit on them again, and on the following morning she began building a nest only 11 feet from the one containing her first three eggs, being accompanied in search of material by the intruding cock, to whom she could now presume to be mated.

The behaviour of the deserted cock was extraordinary. On the evening of the day on which the hen last sat on the three eggs I went into the hide at 1815, the nest being vacant at the time.

The cock went on at 1833 $\frac{1}{2}$. At 1840, after several re-arrangements of the eggs, I noticed it fidgeting with a piece of loose nest-material; then pecking at eggs could be heard clearly, brisk tapping sounds, and I felt sure a shell must have been broken, though no crushing was audible. The bird then resettled on the nest, and as far as I could see the bill looked dry, but a gusty wind was blowing some loose reeds to and fro across the nest. At 1840 $\frac{1}{2}$ it left and I inspected the nest, to find only two eggs remaining, with a slight smear of albumen and perhaps some minute fragments of shell. At 1845 the cock came on again and I continued to watch until 2035, when it was beginning to get dark and I left to check up some other nests. This made a spell of 150', and the cock sat on the eggs for 57 minutes, the nest being vacant for the remainder of the time. To my disappointment he did not dispose of the remainder of his eggs. I am fairly certain that the bird must have flown off with the one egg at 1845; I do not think he could have eaten it at the nest between 1840 and 1840 $\frac{1}{2}$, the time being too short and, in any case, I was watching him closely. None the less as he had his head and neck down in the nest and invisible to me, such a possibility cannot be entirely discounted. The importance of the observation lies not so much in the exact method of disposal, as in the fact that this was the first instance observed of the way in which eggs may disappear from nests.

The next morning, June 19th, this nest, still containing two eggs, was watched by Hill and the writer from 0735 until 1220, a spell of

285 minutes, out of which the cock sat for 43 minutes. He frequently sang while on the nest, as the intruding cock, in the company of whom his previous mate was progressing with the new nest so close, often came to sing within two or three feet of this nest. Scufflings in the reeds in which all three birds took part were very frequent. The only occasion when the hen came to her old nest was at 0817, when the cock was absent. She went rather furtively to the nest and very deliberately took out a strand of material, flying off with it in the direction of her new nest, though I cannot say if she used it in that structure. I was inclined to think at the time that this was to be another case of nest-stripping, but the hen was not observed to come again. In this connexion it is as well to bear in mind that the cock was still holding the territory immediately adjoining the nest.

From 1005 until 1220 hours the deserted cock did not return to his two remaining eggs and I wrote, prematurely as it turned out, "I think we shall see no more of him." For when I inspected the two eggs late on that evening they did not feel absolutely cold, so I covered them with a few small pieces of dead reed. At 0730 on the 20th I found the reeds removed and the eggs very lightly warm. The nest was then watched for 57 minutes, in which time the cock sat for a total of nine minutes in very brief spells. He was clearly being worried by the intruding cock and sometimes appeared to be chased right away. In the afternoon, however, he managed to sit on the eggs for 27 minutes, which, oddly enough, is the longest continuous period I have recorded for a cock. Later, however, he was again chased right away. That evening the eggs felt quite cold. Early in the morning of the 21st the nest was found to be empty, though a long wisp of dead reed-leaf was lying across the cup and had been loosely woven round one reed. The intruding cock sang all round the nest, apparently having completely ousted this cock from his territory, as well as having "won" his mate. The original cock was certainly not seen to return to the nest that day, and reed-chips placed in the nest were never removed. It is purely a matter for conjecture as to whether the cock had disposed of his remaining two eggs in the same way as the first one, or whether they disappeared in some other way.

12. DISAPPEARANCE OF CLUTCHES.

It seems necessary at least to record the fact that again and again whole clutches of eggs have disappeared from nests, often in a matter of hours. The disappearance coincides pretty clearly with territorial encroachments, and occurs most frequently when there is a marked influx of new birds during the first half of June. Thus five clutches disappeared on June 11th and 12th, 1945, and six clutches between June 9th and 11th, 1946. Three of the six 1946 examples disappeared on one afternoon while I was watching the birds, but unfortunately not the right pairs. This factor, however, not only removes any doubt of human interference, but also the idea, far-

fetched perhaps, that the culprit might have been a marauding Crow or Kestrel. As it is difficult to see what could attack the nests from below, it seems fairly certain that the birds themselves must be responsible. In 1947 it is hoped that during early June at least three or four people may be available for watching, instead of only one, in which case it should be possible to solve what is at present only an intriguing riddle.

13. NOTES ON PLATES.

Plates 38 and 39 illustrate a mode of behaviour not, as far as I know, previously recorded or photographed, the male coming to shelter the sitting female during a thunderstorm.

14. ACKNOWLEDGMENTS.

My best thanks are due to Dr. Goodyear, without whose enthusiasm and help this paper would not have been written, and to W/Cmdr. Peter Hill for his photographs. I am also most grateful to Mr. Ray Caudwell, who arranged accommodation for Dr. Goodyear and myself, and to Mr. G. H. Parker, on whose land the reed-bed is situated. Finally I must thank Mr. B. W. Tucker for his pertinent criticisms and freely-given advice.

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GANNETS BREEDING IN THE CHANNEL ISLANDS: TWO NEW COLONIES

BY

RODERICK DOBSON AND R. M. LOCKLEY.

(Plates 40-42).

THE first indication we have of the breeding of the Gannet (*Sula bassana*) in the Channel Islands came in the summer of 1945, when an Alderney fisherman, Mr. E. Quinain, returning home after an enforced absence of five years, noticed that the eastern side of the rock of Ortac, lying between Alderney and the Casquets, was covered with Gannets. At the same time he discovered that a smaller colony was nesting on the rocks called Les Etacs (also known to the fishermen as the Garden Rocks) which lie off the western end of Alderney.

It is unfortunate that, owing to the German occupation of Alderney from 1940 to 1945 and the absence of the native inhabitants of this island during the same period, it is not yet known in which of these years the Gannets first occupied these sites; but the fishermen of Alderney are quite certain that no Gannets were nesting on Ortac, Les Etacs, or on any other rock in these waters in 1940, though they say it was common to see Gannets fishing near Alderney in the summer months.

Towards the end of 1945, Mr. Quinain supplied the above information in correspondence with Mr. H. J. Baal, of St. Helier, Jersey.

It was obviously imperative that an expedition be made in 1946 to ascertain the latest facts. Messrs. Roderick Dobson and K. LeCocq visited Alderney on May 21st, 1946, and were able to land on Les Etacs; they also approached Ortac by boat and took photographs. On June 7th, 1946, the writers flew over Ortac and took photographs from the air; on June 9th they revisited Ortac in a boat and took a series of photographs to supplement those taken from the air. Ortac is difficult to land upon and very few people have done so, we believe; on this occasion bad weather with a heavy swell made it impossible to land on Ortac or Les Etacs, but good views of the latter rocks were obtained from the cliffs of Alderney, from which some two-thirds of the Gannets are visible. On June 11th, as the writers were leaving Alderney, they were able to take photographs of Les Etacs from the air.

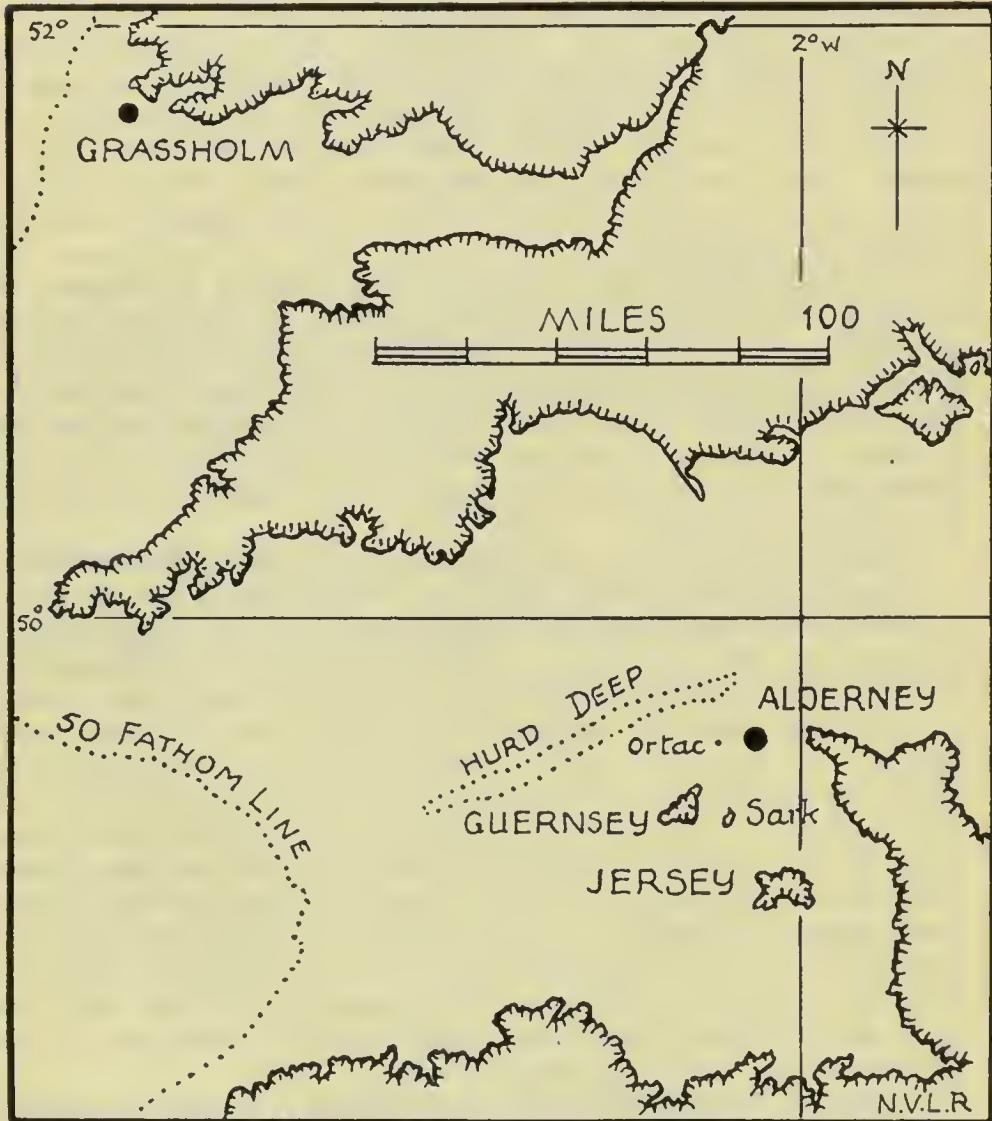
From these visits and from the photographs obtained it is possible to compute the number of nesting pairs of Gannets in the Channel Islands in 1946 at a minimum of 450 pairs, divided as follows:—

- c. 250 pairs on Ortac,
- c. 200 pairs on Les Etacs.

This new colony is of special interest as extending the present breeding range of the Gannet southward by almost 2 degrees of latitude. The nearest existing colonies are those on Grassholm, Wales, and at Bull Rock, S.W. Ireland, 195 miles and 375 miles distant respectively.

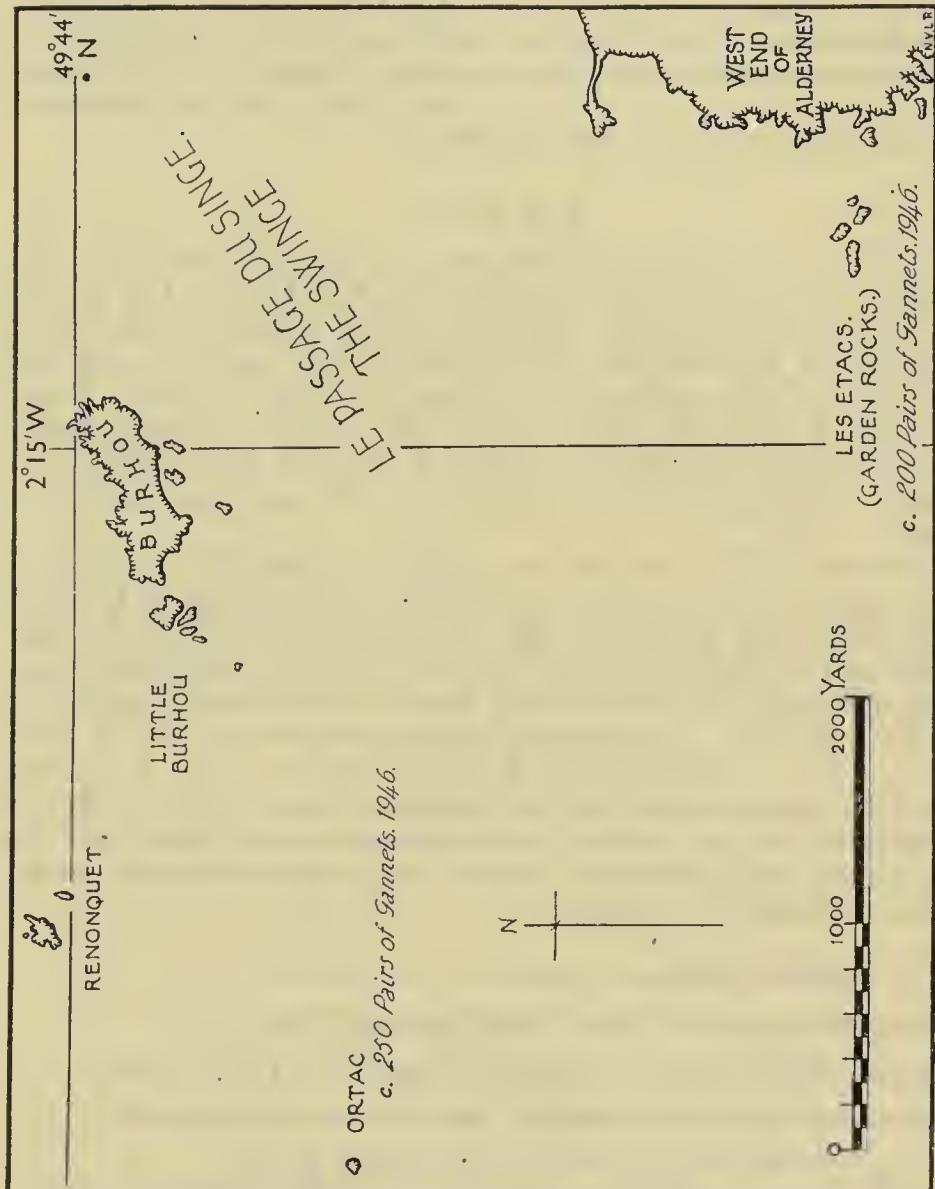
ORTAC.

The rock of Ortac measures about one-third of an acre in extent and stands in an isolated position, Lat. $49^{\circ} 43' 27''$ N., Long. $2^{\circ} 17' 30''$ W. It is 79 feet above L.W.O.S.T., and is composed, we are told, of a coarse Cambrian sandstone; it appears to have no soil and very little, if any, vegetation.



MAP SHOWING POSITION OF THE NEW COLONIES RELATIVE TO NEAREST EXISTING COLONY ON GRASSHOLM.

The Gannets' nests appear to be made of seaweed and flotsam and, as will be seen in the accompanying photographs, Ortac has suitable nesting ledges on its crown and its easterly face. The westerly side is unsuitable, being steep and much exposed to the prevailing south-westerly swell and winds. Its east side is protected from excessive wave-action by the not far-distant islands of Burhou



MAP SHOWING POSITIONS OF ORTAC AND LES ETACS, WITH REFERENCE TO ADJACENT ISLANDS OF THE CHANNEL ISLAND GROUP.

and Renonquet. The size of the island places a limit on the number of breeding Gannets; the maximum capacity of Ortac, therefore, might be put down at 500 pairs of nesting birds. It is quite possible that this limiting factor early caused the (surmised) increasing number of Gannets to overflow from Ortac to Les Etacs; but of this, of course, we have no actual proof. Les Etacs, at least, have much more room than Ortac for further expansion and might comfortably accommodate some 1,000 pairs of nesting Gannets. No immature birds were seen on or near Ortac. About 100 pairs of Guillemots and a few Razorbills also breed on Ortac.

LES ETACS.

Les Etacs consists of two groups of igneous rock some acre and a half in extent. Height, 128 feet above L.W.O.S.T. Lat. $49^{\circ} 42' 20''$ N., long. $2^{\circ} 14' 26''$ W. The main colony of Gannets has settled on the most westerly and largest islet which has some soil and vegetation (chiefly sea-beet and sea-pink and some *triplex*). It has a hog's-back formation with a surface suitable for many more nests; at present there are some 190 nests on this site, two-thirds on the central northerly slope and one-third on the contingent southerly slope.

A further 10 pairs occupy the summit of a pinnacle of about the same height in the eastern group, distant some 100 yards from the main colony. On May 21st, 1946, the majority of nests in the main colony on Les Etacs contained eggs, some of which were freshly laid; many nests near the summit were, however, still under construction and without eggs. No immature Gannets were seen in May or June, but on a visit to Alderney from August 6th to 13th, 1946, R. Dobson saw, from the mainland of the island, a considerable number of Gannets in first and second year plumages on or flying over Les Etacs; they were constantly settling on the top of the rock, to one side of the breeding colony.

The following birds also breed on Les Etacs:—

Great Black-backed Gull (*Larus marinus*), two pairs.

Herring-Gull (*Larus a. argentatus*), twenty or thirty pairs.

Kittiwake (*Rissa t. tridactyla*), nine nests on northern side.

Shag (*Phalacrocorax a. aristotelis*), at least 70 pairs.

British Razorbill (*Alca torda britannica*), fifty pairs (?)

Southern Guillemot (*Uria aalge albionis*), several hundreds.

Oystercatcher (*Hæmatopus ostralegus occidentalis*), two pairs.

Rock-Pipit (*Anthus spinolella petrosus*), two or three pairs.

Carrion Crow (*Corvus c. corone*), one nest.

NOTES.

YOUNG BIRDS RETURNING TO NEST.

THE following records of young birds returning to their nest after having left it may be of interest (*cf. ante*, pp. 26, 152, 178, 246).

Greenfinch (*Chloris c. chloris*). Five hatched. Flew May 30th, 1946. Back in nest 4.30 p.m., summer time, and remained one night. It was showery weather.

Linnet (*Carduelis c. cannabina*). Six hatched. Three flew July 23rd, 1942, and were back in the nest that night. July 24th, two more flew. All five returned that night, sitting on surrounding twigs, leaving one bird in the nest. July 25th, all flew and did not return.

Linnet (*Carduelis c. cannabina*). Four hatched. On May 27th, 1944, two came out of the nest and sat in the hedge close to it. On May 28th all flew, but came back to the site of the nest for one night.

Spotted Flycatcher (*Muscicapa s. striata*). Four hatched. On July 3rd, 1944, two flew and came back to the nest after each flight, sleeping in it for that night. On July 4th all flew and did not return.

Spotted Flycatcher (*Muscicapa s. striata*). Four hatched. On June 20th, 1945, three flew, returning into the nest after each flight and remaining in it that night. It was a very wet day. On June 21st all flew and did not return.

Is it possible that nestlings more advanced than the others take short flights and return to the nest until the whole brood are ready to fly away and also that inclement weather plays a part in their behaviour?

VERA MAYNARD.

“ANTING” BY MAGPIES.

IN July, 1945, when staying in Co. Wicklow, I was much interested in the behaviour of a group of some 24 to 30 Magpies (*Pica p. pica*) from a neighbouring glen, which flew across the garden every evening and dropped on to a lawn where they occupied themselves in feeding, squabbling, etc. One or two generally came hopping up some steps which led from the lawn to a gravelled terrace and seemed to be busy on the steps. I examined the steps one evening before their visit and found the two top ones swarming with ants. That evening two birds came right up, so that I could distinctly see them from where I sat in a window. They collected the ants in their beaks and, raising their wings, tail and breast-feathers, etc., wiped the ants under the feathers until they were well covered. They then hopped back and joined the rest of the birds. E. REYNOLDS.

[For previous notes on “anting”, see *antea*, pp. 84, 212. Chisholm, *Ibis*, 1944, p. 393, records “anting” by a tame Magpie.—EDS.]

ROSE-COLOURED STARLING IN NOTTINGHAMSHIRE.

ON May 26th, 1946, my wife and I had a hurried, but close view of a Rose-Coloured Starling (*Pastor roseus*) on a lawn at Gedling, Notts. Though somewhat obscured by brownish feather tips, the pink of

the mantle was very striking, as were also the glossy green wing-coverts, but there was little gloss on the black head, and the pink of the breast was also much hidden by brownish tips. The bill was a pinkish-yellow, and general build and action starling-like. I judged it to be a first year male not yet much abraded. J. STATON.

COURTSHIP FEEDING OF GREENFINCH.

WITH reference to previous notes on this subject (*antea*, pp. 212-213), on April 12th, 1944, at Chingford, Essex, I saw a female Greenfinch (*Chloris ch. chloris*) crouching on a branch of an apple tree. A male was fluttering above her uttering an excited variation of the usual song. He put his bill into the open beak of the female and fed her. Coition then took place. The male again went through all the actions of feeding the female. ALWYNE C. WHEELER.

CHAFFINCH AND TREE-SPARROW WADING AND PROBING FOR FOOD.

WHILE overlooking a large sewage pool from partial concealment on June 3rd, 1945, I noticed what seems to be unusual food collecting behaviour in a male Chaffinch (*Fringilla cælebs gengleri*) and a Tree-Sparrow (*Passer m. montanus*). Both birds came, often together, at intervals of a few minutes during an hour of watching to a large expanse of semi-liquid mud 16 to 18 inches deep, in which they sank till about a third of the tarsus was covered as they moved about. Here they probed in a rather circumscribed area to the full depth of the bill, gradually acquiring collections of small, limp, dangling objects in their bills, possibly dipterous larvæ of some kind. Unfortunately, owing to the liberal coating of black viscous mud on these objects and also on the birds' bills it was not possible to be more precise, the consistency and depth of the mud also forbidding personal investigation.

After each visit the Chaffinch fed a fledged brood in a nearby hedge, while the Tree-Sparrow fed a brood still in the nest-hole in a hedgerow elm. J. STATON.

YELLOW BUNTING AND TREE-PIPIT LAYING IN SAME NEST.

ON May 20th, 1946 I was watching Tree-Pipits (*Anthus t. trivialis*) near Elterwater, Westmorland, when I saw a female fly down to its nest in a patch of bracken. On investigation I found, much to my surprise, that the nest contained five Tree-Pipit's eggs, and three eggs of the Yellow Bunting (*Emberiza c. citrinella*). A fourth Yellow Bunting's egg lay on the ground just outside the nest. This I replaced.

The nest was a typical example of a Tree-Pipit's, but the Yellow Bunting, which builds a nest of comparable material and structure, frequently nests on the ground on these fells, and consequently it was very difficult to say, with any certainty, to which species the nest could be attributed.

On May 21st, I visited the nest again, to find that the Tree-Pipit had laid a sixth egg. The Yellow Bunting's fourth egg had been removed entirely, possibly by the Tree-Pipit to make room for her sixth egg.

On May 24th I paid another visit to the nest to find the Yellow Bunting sitting quite happily on the composite clutch of nine eggs! I took this opportunity to photograph the nest and eggs. The Tree-Pipits were nowhere in evidence. My last visit was on June 1st, and again the Yellow Bunting was sitting. The Tree-Pipit, it would seem, had deserted.

E. H. PARKHURST.

NOTES ON THE SONG OF THE BLACK-HEADED BUNTING.

THE following notes on the song of the Black-headed Bunting (*Emberiza melanocephala*) were made in S.W. Persia in May-September, 1945.

Of a large number of birds observed all except one had several definite song perches. The exception had one song perch only—a large rock, about ten feet high, on a grass slope otherwise devoid of elevated perches. Song perches were mostly used in the early morning and in the evening, but were resorted to at irregular intervals throughout the day. The song perches were generally the tops of rocks and small bushes, but were sometimes clods, stones or small rocks, of quite insignificant elevation. There were no trees, tall bushes or telegraph-wires in the area. In addition, song was habitually delivered from the ground, apparently at any point in the bird's territory, during feeding. The song took approximately three seconds to deliver. One bird, observed in the early morning of June 7th, sang six times per minute for three minutes, being answered song for song by another bird about one hundred yards distant. When the second stopped singing, the first continued at between four and five times per minute and began preening between songs. The frequency of song on the ground, during feeding, was appreciably less than that of song from a song perch.

Song was frequently delivered on the wing in level flight. This occurred when the bird was disturbed from a song perch (occasionally), just before arrival at a song perch from feeding (occasionally), and in flight between song perches (frequently).

On one occasion only a more pretentious song-flight was witnessed. The bird flew up, almost vertically, from a song perch to a height of about twenty feet. Song was started at the top of the flight and delivered on the steep descent. As soon as the song finished the bird "flattened out" and flew on to another perch about forty yards distant.

All the birds under observation had stopped singing by June 29th. However, two were heard in song on July 13th in another area, about a hundred and twenty miles further north. No song was heard in August and September.

W. E. ALMOND.

NUTHATCH FEEDING NESTLING STARLINGS.

FOR the last two or three years a pair of Nuthatches (*Sitta europaea affinis*) have reared a family in a hole in an old oak about 3 ft. away from a nesting-box on the same tree which has been tenanted for many years by Starlings at Hurst Green, Oxted, Surrey.

In mid-May, 1946, I noticed that when coming to the windowsill for breadcrumbs, as is their custom, one of the Nuthatches flew away with a beakful of crumbs. Thinking that this meant that their eggs must be hatched, I watched its flight back to the tree and was surprised to see that the bird entirely ignored its own nest and instead delivered the bread to the young Starlings through the hole of their nesting-box.

The position at the time of writing is that the Nuthatch, unhindered, is taking turn about with the two parent Starlings in feeding the young of the latter; in fact, when breadcrumbs are available its visits to the nest are far more frequent than those of the Starlings, who take no notice whatever of the Nuthatch in spite their frequently having to "stand-by" until it leaves the nest. There is no perturbation as is usual in cases when Nuthatches approach too near a Starling's nest, or vice versa. In addition to feeding the young Starlings, the Nuthatch brings out the droppings in a similar manner to the parent birds.

It is not possible to see into the Nuthatch nest and so discover the position there, and I cannot say whether it is the cock or hen Nuthatch that is feeding the Starlings, but I think the cock.

The Starlings' supply of food appears to be entirely of caterpillars from a neighbouring field and one wonders how this diet mixes with that of breadcrumbs supplied by the Nuthatch.

H. POWELL.

DISPLAY FLIGHT OF MARSH-TIT.

ON April 11th, 1946, while in Delamere Forest, Cheshire, I witnessed a display-flight of a Marsh-Tit (*Parus palustris dresseri*) which is not recorded in *The Handbook*.

I was watching one of these birds, obviously a hen, constructing her nest in a hole of a tree by a brook, when she suddenly flew up onto a branch about five feet from the ground and assumed the usual solicitation posture of small birds, with fluttering wings, somewhat humped body, head held slightly backwards and tail cocked up at an angle of about 45°.

On looking round I observed another Marsh-Tit obviously a cock, in a small hawthorn about eight yards away from the hen. He was calling incessantly "pits-pits-pits-pits-pits . . ." as rendered in *The Handbook*.

After about 30 seconds of this calling, the cock left his perch and flew towards the hen in a manner practically identical to the nuptial display-flight of the cock Blue-Tit (*P. cæruleus obscurus*), the wings being moved very rapidly although the bird only moved slowly, giving a misty, moth-like effect. The tail was slightly expanded and

held slightly downwards. He flew in this way right on to the hen's back, where coition followed. JOHN SOUTHERN.

EVIDENCE OF PART PLAYED BY MALE RED-BACKED SHRIKE IN SITE-SELECTION.

FURTHER to my notes in Vol. xxxvii, p. 155, on the site selection of the Red-backed Shrike (*Lanius c. collurio*), circumstances strongly suggesting that the male plays a predominant part came to my notice during the seasons 1945 and 1946.

On June 26th, 1945, a nest with four eggs of a distinct brown type was found, in Surrey, in a most unusual type of site for the particular locality—namely, a very gaunt briar, almost completely devoid of foliage. So bare was the bush that the nest was plainly visible from 20 yards away. Out of a large number of nests of this species examined during the past ten years, in this area, I had never before seen one in a similar site; at least 90% being in hawthorn, the remainder in either brambles, blackthorn or thick, leafy briar.

On June 22nd, 1946—only 30 yards from last year's nest—a nest was found in exactly the same type of briar bush. This, again, was quite obvious from some distance off but contained five eggs of a green type, showing that the female was a different bird from that of the previous year (last year's female was found nesting about 100 yards away, the nest being built in the usual type of leafy hawthorn).

The very unusual character of the bare briar sites and the fact that they occurred so near one another in consecutive years (in spite of the existence of an abundance of more usual sites) suggest strongly that the male was the same bird in both years and it was he who played the leading part in the selection thereof.

H. J. HOFFMAN.

PIED FLYCATCHER NESTING IN NORTH DERBYSHIRE.

ON June 3rd, 1946, in North Derbyshire, I caught a glimpse, from a car, of a cock Pied Flycatcher (*Muscicapa h. hypoleuca*). On the next evening—June 4th—I returned to the place, again saw the cock and also the hen, and eventually traced them to where they were building in an old woodpecker hole 30 feet up an ash tree.

Both cock and hen were visiting the nesting-hole with material every two or three minutes for the thirty minutes or so that I watched them. I then had no opportunity of visiting the site again until June 24th, when the hen was feeding young. Since then I have seen her every few days until July 16th. On July 15th, the young were very active in the nest and could occasionally be seen from ground level. From June 24th to July 16th, although considerable time was spent at the nest, the cock was never seen and the hen was apparently rearing her brood unaided.

On July 15th, John Armitage kindly came over from Buxton to confirm the record. On July 19th and 20th, a search in the immediate vicinity failed to reveal any sign of either hen or fledglings.

G. RONALD PRYOR.

SONG-PERIOD OF GOLDCREST

WITH reference to Mr. A. H. Hall's note under this heading (*antea.* Vol. xxxix, p. 215) on December 1st and 16th, 1945, I heard full song from a Goldcrest (*Regulus r. anglorum*) from conifers by Blagdon reservoir in Somerset. On January 13th, 1946, another was singing from conifers at Kellythorpe, East Yorks.

JOHN H. BARRETT.

WITH reference to the note on this subject, I have records of Goldcrest song in Co. Mayo in the second, third and fourth weeks of December. Song is, however, irregular and uncertain at that period. In the same region there is exceptional song in the first and second weeks of February. ROBERT F. RUTTLEDGE.

REMARKABLE BEHAVIOUR OF BLACKBIRD.

AT 8.5 a.m. (D.B.S.T.) on April 6th, 1945, when walking under an avenue of Horse Chestnut trees in Southampton, I noticed two or three young leaves falling to the ground. As they were mirans their stems, and it was a fine quiet morning, I naturally looked up to see the probable cause, when to my surprise I saw a male Blackbird (*Turdus m. merula*) pluck off a young leaf at its base. It then quickly ran and hopped along a branch and repeated the performance and generally behaved very excitedly.

Subsequently turning the occurrence over in my mind, I concluded the cause was sexual excitement or related to a form of pursuit mentioned in *The Handbook* under "Display and Posturing" which reads—"Male when chasing another will (rarely) pick up twigs, etc., and drop them"

Although I kept the surrounding area under observation for several minutes I failed to see any other Blackbird which might have been the cause of the male Blackbird's excitement.

R. E. WILLIAMS.

REDSTART NESTING IN CO. KERRY.

ON May 29th, 1946, at Darrynane on Abbey Island, Co. Kerry, Ireland, I watched a pair of Redstarts (*Phoenicurus ph. phoenicurus*) feeding young and on the following day found a nest in a hole in the west wall of the ruins of the Abbey, containing six young birds fully fledged. On May 31st the young birds had left the nest and from this date until June 6th, I saw the two pairs feeding eight to ten young birds. In addition to the two pairs mentioned I saw two cocks and a hen. Between Darrynane and Caherdaniel I heard a cock singing on June 1st, and again on June 6th, when I saw the singing bird.

The Handbook states—"A few pairs used to breed regularly in Wicklow and occasionally in Tyrone but doubtfully now."

E. W. PEARCE.

UNUSUAL HUNTING BEHAVIOUR OF PEREGRINE FALCON.

ON June 24th, 1946, I was watching a pair of Redshanks (*Tringa totanus britannica*) feeding three young about a week old, on the

salt-marsh at the head of Loch Linnhe, near Fort William, Inverness-shire. Suddenly the adult Redshanks got up with loud cries, and I then saw a large bird quartering the marsh and frequently hovering after the manner of the Kestrel (*Falco t. tinnunculus*). I was about fifty yards away and concealed in bushes, and with binoculars I identified the bird as a female Peregrine Falcon (*Falco p. peregrinus*). The long, pointed wings, barred underside, dark moustachial stripe and the lemon-yellow legs and cere were all clearly seen. The wing-beats were fairly rapid, and the bird flew at about thirty feet.

Upon reaching the "pitch" immediately above the spot where the young Redshanks were (presumably) crouching in the short grass, the falcon hovered for about forty-five seconds, then dropped vertically with extended legs and picked up one of the chicks, rising again immediately and making off in the direction of the mountains pursued for a short distance by the adult Redshanks.

The Handbook states that birds are only "exceptionally" taken from the ground, and, although mentioning "hovering for a few seconds," does not give hovering and quartering as a mode of hunting. Also, there appears to be no record of Redshank chicks being taken.

E. L. ROBERTS.

"UP-ENDING" BY REDSHANK AND SPOTTED REDSHANK.

The Handbook does not record the Redshank (*Tringa totanus britannica*) "up-ending" for food. On November 26th, 1944, on the Exe estuary I saw one in a pool on the mudflats, the water reaching well up to its breast. It repeatedly submerged its head and neck to reach the mud and then tilted its body more than usual two or three times. Probably getting into deeper water it began to "up-end" completely, its tail pointing straight up and its red feet paddling rapidly on the surface of the water as it retained this position for about two seconds. This action was repeated several times.

On August 31st, 1941, also on the Exe estuary, I watched a Spotted Redshank (*Tringa erythropus*) wading and feeding in water so deep that it eventually floated off its feet. It flew to another part of the same gutter and descended to join three immature Sheld-Duck (*Tadorna tadorna*). In the centre of this little group it again floated on the water and resumed its feeding by repeatedly "up-ending." In this case the movement was very quick, the bird coming back to an even keel instantly.

R. G. ADAMS.

OVERLOOKED RECORD OF KENTISH PLOVER IN MIDDLESEX.

I HAVE recently come across an overlooked record of this species. E. Hartert and F. C. R. Jourdain, *The Birds of Buckinghamshire and the Tring Reservoirs*, 1920, p. 234, although they knew of no occurrence of the Kentish Plover (*Leucopolius a. alexandrinus*) for their area include the following: "Although just outside our boundary, it seems worth recording that G. W. Kerr saw a Kentish Plover at the

Stanwell Reservoir, Middlesex, on April 21, 1915 (*in litt.* to Pettitt)." When I published *A History of the Birds of Middlesex* in 1935 I knew of no occurrence of this species for the county. Mr. Kerr's record is thus an addition to the county list and brings the remarkable list of Middlesex waders up to thirty-four. Stanwell Reservoir is another name for Staines Reservoir.

WILLIAM E. GLEGG.

LAPWING'S NEST WITH SIX EGGS.

WITH reference to the recent note under this heading (*antea*, p. 158), on April 16th, 1929, I found a nest containing six eggs of Lapwing in a meadow at Great Bookham; the bird was sitting on the nest when I entered the field. There was only one pair of Lapwings in the field, and none in the adjoining meadows. On one occasion only have I found a nest containing five eggs of this species, on April 16th, 1937; although I have several times heard of fives. GORDON DOUGLAS.

WATER-RAIL WASHING FOOD.

WITH reference to the notes on food-washing habits of waders (*antea*, pp. 184, 249) it may be of interest to record that I have observed similar behaviour on the part of a Water-Rail (*Rallus a. aquaticus*) at the Wilstone Reservoir, Tring, on December 6th, 1938. After getting food out of the mud it ran quickly with it to the water and rinsed it. Once I definitely saw that it had a worm. It also appeared to swallow small grit and pebbles.

CYRIL E. MARTIN.

DO JUVENILE BIRDS SURVIVE LESS WELL THAN ADULTS ?
Correction. In Table III of Mr. David Lack's paper with this title (*antea*, p. 259) the heading of the last column, "On first Aug. 1st of life", should read "On second Aug. 1st. of life".

BLACKBIRD SINGING IN NOVEMBER.—Mr. I. Kimbrey sends us particulars of a Blackbird (*Turdus m. merula*) which was regularly heard singing at about 8 a.m. from November 20th to 25th inclusive (except the 23rd) and again on November 28th, 1944, at Northcourt, near Abingdon, Berks. No November song is recorded in the *Handbook* chart.

HERRING-GULL NESTING IN CHESHIRE.—As the record of Herring-Gull nesting on Hilbre Island in 1945 (*antea*, Vol. xxxviii, p. 376) has been queried on the ground that the birds were not seen and identified by any ornithologist, it seems desirable to state that Mr. Ellison informs us that Herring-Gulls were constantly present on the island and were repeatedly seen by the keeper, whereas Lesser Black-backed Gulls were only very occasional visitors. We therefore see no good reason for not accepting the record. It may be added that we have examined the egg, which quite certainly belongs to one or other species, though distinctly short for either, the measurements being 61.8 x 43.6 millimetres.

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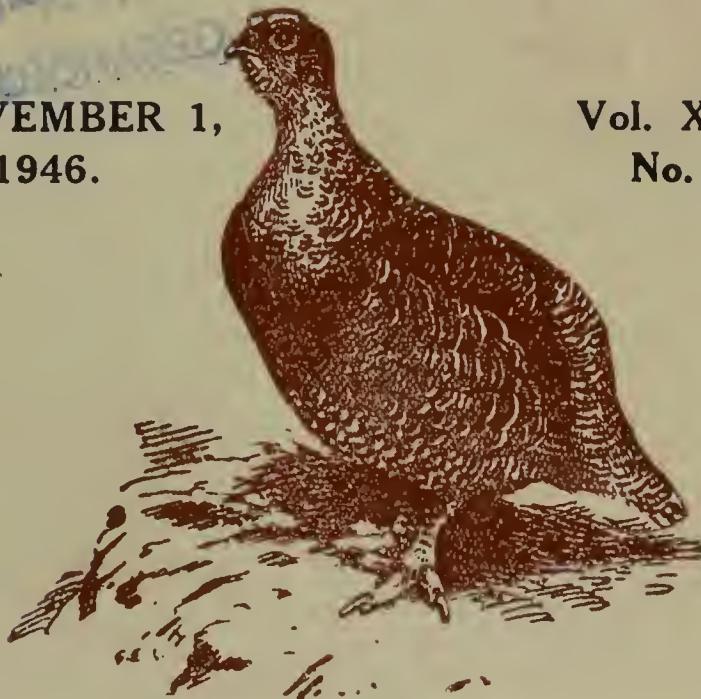
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BERNARD W. TUCKER, M.A., F.Z.S., M.B.O.U.

ASSISTED BY

NORMAN F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

AND A. W. BOYD, M.C., M.A., F.Z.S., M.B.O.U.

CONTENTS OF NUMBER II, VOL. XXXIX, NOVEMBER 1, 1946.

	PAGE
Notes on some Monmouthshire and East Glamorgan Birds, 1943-1945. By Bruce Campbell	322
Roosting Habits of the Irish Coal-Tit, with some Observations on other Habits. By Robert F. Rutledge	326
Notes on nest-sites of the Oyster-catcher and the Long-eared Owl as a hole breeder. By Fr. Haverschmidt	334
Variations in clutch size and some nesting success data. By R. A. W. Reynolds	337
Notes :—	
Raven nesting in a rookery (Bruce Campbell)	340
Ravens nesting in a herony (O. D. Hunt)	340
Nest sanitation and egg-shell disposal of Chough (Bruce Campbell)	340
Food of Bullfinch (Bruce Campbell)	341
Unrecorded posture of Great Tit (M. D. England) ...	341
Nesting of Willow-Tit in Glamorgan (Bruce Campbell) ...	341
Spotted Flycatcher feeding first brood while incubating second clutch of eggs (H. E. Woods)	342
Pied Flycatcher breeding in Ayrshire (G. Hughes Onslow) ...	342
Fieldfares in Derbyshire in June (N. Harwood) ...	342
Blackbirds attempting to rear four broods from the same nest (Donald A. Taylor)	343
Early singing of juvenile Hedge-Sparrow (B. H. Alabaster) ...	344
Green Woodpecker in Dumfriesshire (Brian Johnson-Ferguson)	344
Golden Eagle running (Seton Gordon)	344
Black Stork in Scotland (W. C. Osman Hill)	344
Gannet feeding on large fish (A. V. Cornish)	345
Yellowshank in Devon (A. V. Cornish, H. J. Craske, B. J. B. O'Dogherty, E. W. Hendy and H. S. Joyce) ...	346
Short Notes :—	
Early nesting. Courtship of Rook. Sexual behaviour of Magpies in assembly. Gait of Corn-bunting. Late Fieldfares in Lincolnshire. Osprey in Yorkshire. Mallard sharing nest. Gannet in Warwickshire in June. Behaviour of Avocet. Black-headed Gulls "up-ending." Pheasant's nest with thirty-one eggs	346
Reviews :—	
<i>Birds in Colour.</i> By Walter Higham	349
<i>A Guide to Bird-Watching.</i> By Joseph J. Hickey ...	349
<i>How to Study Birds.</i> By Stuart Smith ...	350
<i>Modern Bird Study.</i> By Ludlow Griscom ...	351
Letter :—	
Association of three Rooks at nest (Bertram M. A. Chappell)	352

NOTES ON SOME MONMOUTHSHIRE AND EAST
GLAMORGAN BIRDS, 1943-1945

BY

BRUCE CAMPBELL.

THESE notes are intended to follow up those published by L. Hugh Doncaster and myself in Volume xxxvi, pp. 198-199, which covered the years 1941-1942, and dealt mainly with the Vale of Ewyas, in the extreme north of Monmouthshire, and the valley of the Soar, a typical area in the central part of the county. During the period now under review, a certain number of observations have been made in the industrialized Rhymney Valley, which forms the boundary between Monmouthshire and Glamorgan, while the National Rook Investigation Census in the spring of 1945 gave the opportunity for a superficial but general survey of the whole of Monmouthshire and bordering districts.

The Birds of Monmouthshire, by G. C. S. Ingram and Col. H. M. Salmon (*Trans. Cardiff Nat. Soc.*, Vol. Ixx, 1937) remains the standard paper on the birds of the county and is referred to as "I & S" throughout these notes.

BRITISH GOLDFINCH (*Carduelis carduelis britannica*).—I & S described the increase of this species, except in the mining valleys. This increase has been maintained and Goldfinches now nest well up the Rhymney Valley, in the heart of the coalfield.

TREE-SPARROW (*Passer m. montanus*).—The Soar valley is close to the "Usk district", which I & S give as one of the strongholds of this local species. I recorded it from seven localities in the spring of 1945 and in the Soar valley it is relatively common at present, with winter flocks of over 40 birds. Though it nests mainly in the characteristic old orchards of the area, I have found it in the old pines of the famous Llangibby Walks, and in June, 1945, a pair occupied a hollow inn-sign in a hedgerow.

BLUE-HEADED WAGTAIL (*Motacilla f. flava*).—A male at Pontnewydd in June, 1945 was recorded in Vol. xxxviii, p. 316. This was thought at the time to be the first occurrence of this subspecies in Monmouthshire, but is in fact the second, a pair having been observed and the female shot at Peterstone Wentloog on April 21st, 1940 (*Brit. Birds*, vol. xxxv, p. 127).

YELLOW WAGTAIL (*Motacilla flava flavissima*).—The nesting of this species in cornfields in central Monmouthshire was strongly suspected in 1942, and proved on May 30th, 1943, by the discovery of a nest in young oats and peas in the Soar Valley; in both 1944 and 1945 at least three pairs were seen repeatedly in cornfields, chiefly oats, in this neighbourhood, and from their behaviour there could be no reasonable doubt that they were nesting; in 1945 also nests were found in oats (Pontnewydd) and in lucerne (Soar valley). Less definite observations elsewhere in the county, chiefly of males on perches above cornfields, suggest that the habitat is now in general use.

BRITISH NUTHATCH (*Sitta europaea affinis*).—During the Rook census Nuthatches were seen or heard in 23 separate localities in Monmouthshire, not counting the Vale of Ewyas, where they were always common. There were no observations, however, from the south-east corner. I & S considered they were also absent from the north-west (the industrial area), but a pair nested in 1944 in the public park at Tredegar. They have also recently colonized the lower Rhymney Valley as far as Caerphilly.

BRITISH WILLOW-TIT (*Parus atricapillus kleinschmidti*).—Although this species can be met with anywhere in the Soar valley, I have only identified it once outside this small area, at Pontrhyd-yrun, about four miles west, on March 25th, 1945. As the Marsh-Tit (*Parus palustris dresseri*) is common in the Soar valley, I have had many chances of watching both, and find that the "tchay" note is the only field-character on which I would care to rely.

I have found the Willow-Tit nesting in holes in rotten fence-posts. The Marsh-Tit nests in similar sites locally, but I am not convinced that it does its own boring. One bird from such a nest in 1945 gave the "pitchu" reaction convincingly and in other respects satisfied me of its identity, but in this case the entrance hole was broken (owing to the rottenness of the wood, a strip frequently falls away below the hole) and I think it had been made the previous year. Out of 50 posts in one line, examined on May 9th, 1943, seven had been bored to different depths. One, its entrance broken, contained ten deserted eggs laid on the bare wood. On May 27th, a second hole had been made underneath, and the bird sitting in it gave the diagnostic "tchee" (or "tchay") when induced to leave. A nest was occupied in the same fence in 1945, but its owners were completely silent whenever I visited it, which, though inconclusive, allows a strong presumption that they were Willow-Tits. Another fence-post nest in 1943 had the foundation of fern scales noted in Vol. xxxvi, p. 246, but the identification could not be clinched, as the bird deserted.

PIED FLYCATCHER (*Musicapa h. hypoleuca*).—In August 1942, L. Hugh Doncaster was almost certain he saw a female or juvenile of this species in a locality in the extreme north of Monmouthshire; on May 29th, 1943, in the same neighbourhood, I saw a pair and found their nest in an old woodpecker's hole—presumably the Greater Spotted Woodpecker (*Dryobates major anglicus*), as a pair had a nest of young on the opposite side of the same tree. The flycatcher's nest had about four young; I did not see any others, but made no thorough search. On April 18th, 1944, two males were singing in the same spot. On May 11th, Mr. A. W. Ecutt visited it and watched a pair behaving with great agitation; the male repeatedly flew up to a hole in a tree and attacked bees issuing from it, snapping them up and letting the bodies drop at once. The performance continued all the time Mr. Ecutt was watching and it seemed likely to him that a swarm had invaded the flycatcher's chosen nesting hole. On May 20th I met with two pairs, finding the nest of one

low in a stump, with eight eggs, and saw a third singing male. None of these appeared to be the birds seen by Mr. Ecutt, unless his had moved their territory. On June 2nd, 1945, I could only find one pair in this locality; they were feeding young in an old woodpecker's hole about 25 feet up a sweet chestnut. The habitat is close to a river, on a bank covered with old chestnuts and oaks, which afford many suitable sites.

From correspondence with Mr. Ingram I learn that this locality is some miles from that in which a pair nested in 1923, and that, inspite of the remark in *The Handbook* ("Breeds....very small numbers N. Monmouth"), no other records of this species nesting in the county have come to his notice since that year.

WOOD-WARBLER (*Phylloscopus sibilatrix*).—I & S considered this species not numerous and very local in the north of Monmouthshire, but recent observations show that it is quite common all up the Vale of Ewyas, and nowhere more so than in the scrub which clothes the "darrens" (rocky outcrops and scree) well above the 1,200 foot contour and just inside Breconshire.

LESSER WHITETHROAT (*Sylvia c. curruca*).—I & S describe this species as "uncommon and very local" in Monmouthshire. During the summers of 1942 to 1945, when I was living at Llandegfedd, in the central part of the county, I noted it singing every year after the early influx until well into June; in 1942 I found three nests with eggs in this neighbourhood, and one in each subsequent year. On May 11th, 1943, I heard birds singing both at Machen and Risca, in the south-west of the county; the bird at Risca was close to a new nest. During the summers of 1943 and 1944, when I was cycling regularly from Llandegfedd to Newport early in the morning—through seven miles of rural habitat—my daily records of song show from one to four Lesser Whitethroats, well spaced out along the route. On May 20th and 27th, 1944, I heard birds in two different localities in the Vale of Ewyas, and one again on June 2nd, 1945. Another sang regularly in May and June, 1945, on a farm at Pontnewydd, south of Pontypool. As I have not gone out of my way to look for this species in Monmouthshire, these records suggest that it is now wide-spread in several parts of the county. On the Glamorgan side of the lower Rhymney Valley a nest was found in 1943, near Caerphilly, where birds sang regularly in 1944 and 1945.

REDBSTART (*Phoenicurus ph. phoenicurus*).—The "welcome increase" noted by I & S has been maintained and at present there is no reason to consider this a scarce bird anywhere except in the south-east of Monmouthshire; it is also now quite common in the adjoining parts of Glamorgan.

BLACK REDSTART (*Phoenicurus ochruros gibraltariensis*).—I saw a female or immature male on allotments behind the National Museum of Wales, Cardiff, on December 17th, 1943.

BRITISH STONECHAT (*Saxicola torquata hibernans*).—The winter of 1939-40 must have decimated the Stonechats of Monmouthshire, for

I have not seen one since then, and have only found them in one locality inland in East Glamorgan. This must now be regarded as a scarce species, while the Whinchat (*Saxicola rubetra*) is common on the bracken-clad hillsides of the industrial area; in other words their position has been more than reversed since I & S described their status in 1939.

COMMON BUZZARD (*Buteo b. buteo*).—There seems little doubt that the Buzzard is now spreading in Monmouthshire, as elsewhere along the Welsh Border. In spite of felling, birds are still found in the locality where we recorded breeding in 1942 (*antea*, Vol. xxxvi, p. 199), and in the spring of 1945 I saw Buzzards in four other localities, three of them east of the Usk, and one close to the town of Monmouth. Unfortunately I was not able to spend the time necessary to prove nesting in any of these cases.

HEN-HARRIER (*Circus c. cyaneus*).—On the afternoon of December 31st, 1943, I had two brief views of a harrier, flying up the Soar valley. Next day I again saw a harrier, which was presumably the same, and had it under observation for several minutes, though mainly in silhouette and in poor visibility. I renewed my previous impression that the general colour of the plumage was blueish, but I could never see the rump. Compared with Rooks and Jackdaws flying near it, it looked much larger, and it was evidently a male Hen-Harrier. I & S give only two previous records for Monmouthshire, one undated and the other in 1925.

TEAL (*Anas c. crecca*).—Mr. Searle, formerly agent at Llangibby Castle, informed me that two nests, with 11 and 5 eggs, were found at Llandowlais on the River Usk in 1943. Teal normally winter in the area, but that year several pairs remained to breed. There are no previous records for Monmouthshire.

SHOVELER (*Spatula clypeata*).—Since I & S give only three definite records of this species for Monmouthshire, it may be worth noting that I saw a small party of both sexes with other wildfowl on flooded fields at Magor, on March 18th, 1940.

GOOSANDER (*Mergus m. merganser*).—Mr. A. W. Ecutt informs me that he received a drake of this species, one of two seen together, from Ynys-y-fro Reservoir, where three of Monmouthshire's seven previous records were made, in the first week of January, 1945. One cannot but regret, however, that shooting is still tolerated on this reservoir, where several rare birds have occurred from time to time.

WOODCOCK (*Scolopax r. rusticola*).—In view of the uncertain status of this species in parts of South Wales, it is worth recording that nests have been found in 1944 and 1945 at Rudry in the south-east corner of Glamorgan, where there is still an area of extensive and suitable woodland.

COMMON TERN (*Sterna h. hirundo*).—In view of the date, and of the scarcity of Monmouthshire records, a bird seen on June 30th, 1945, flying down the River Usk, about halfway between Abergavenny and the town of Usk, should perhaps be recorded.

ROOSTING HABITS OF THE IRISH COAL-TIT, WITH SOME OBSERVATIONS ON OTHER HABITS

BY

ROBERT F. RUTTLEDGE.

(Plate 43).

THE observation in *The Handbook*, Vol. I, p. 256, stating that data on normal roosting habits of the Coal-Tit were scanty, led me to pay particular attention to this subject. My observations are confined to the Irish Coal-Tit (*Parus ater hibernicus*). The results are those of over three years' study of a limited number of birds in Co. Mayo. The locality where observations were made is fairly exposed, but with considerable shelter in the form of gardens, outhouses, trees and scrubby woods.

There are a number of difficulties in the way of detailed study of this species, chief of which is the extreme difficulty of seeing rings on marked birds in thick foliage and on such a restless bird. In summer, in particular, it is very hard to trace birds to their roosts, with the result that there is a paucity of observations at this season. When working alone, or with only one companion, it is extremely difficult to follow up the rapid movements of the birds as they travel through thickets or in high tree-tops prior to going to roost. Observations have, therefore, at times been rather disjointed, especially when a bird changes its roost, thus necessitating renewed search.

Although primarily the work was in connexion with roosting-habits, other habits have claimed attention and some notes on them are given.

I am much indebted to John Barlee for the photographs of two typical roost-sites.

BEHAVIOUR PRIOR TO ROOSTING.

This varies to some extent. Coal-Tits are inclined to become silent about half-an-hour before roosting-time, whereas Great Tits and Blue Tits are inclined to call and scold up to roosting-time. Coal-Tits often go up into the tops of trees or high bushes and there sit silently, perhaps preening. They then suddenly fly off or travel rapidly through the tree-tops or lower bushes for an appreciable distance to arrive at the vicinity of the roost. Often birds arrive and hang about in the vicinity of the roost either to preen or sit quietly for 7-10 minutes, even 20 minutes or exceptionally 25 minutes, before entering the roost. Very rarely have I seen a bird come from a distance and go straight into the roost.

Such instances seem to occur only when a bird is very much behind the normal time of going to roost (e.g. a bird which arrived from a distance, calling and seeming agitated, 33 minutes after sunset, went straight into its roost.). Coal-Tits are normally very suspicious prior to entering their roost. There is individual variation, but on the whole their anxiety is more pronounced than at their

nesting-site. Most birds, before entering finally, will either sit just outside the roost for a few moments, or will enter the roost, then re-appear just outside, perhaps several times. If conscious of being watched they delay entering and may even depart to an alternative roost. Such enforced delays must be avoided when timing birds into their roosts. Timings have been taken from the birds' final entry into the roost.

Once in the roost individuals vary in their alertness, even in similar forms of roost. Some are very wakeful 20 minutes or even 30 minutes after entry; others are not easily disturbed even a short time after entry.

At night they are not very responsive to noise or even to light, but they awake immediately and leave the roost if the tree-trunk or branch, etc., is lightly tapped or jerked. (*cf.* Dunsheath and Doncaster [1]).

ROOSTS.

The following have come under my notice.

Holes in rotting tree-trunks—usually of ash-trees—(illustration No. 1): Frequent.

These holes are frequently enlarged from Tree-Creepers' scrapings as Messrs. Rankin [2] have pointed out, but are also made by the tits themselves.

I have found them to be very uniform in shape, as the following dimensions of three typical ones show.

<i>Depth; entrance to back.</i>	<i>Diameter at entrance</i>	
	<i>Vertical</i>	<i>Horizontal</i>
3 ins.	2 ins.	1 $\frac{3}{4}$ ins.
3 ins.	2 $\frac{1}{2}$ ins.	2 $\frac{1}{2}$ ins.
2 ins.	2 ins.	2 ins.

The difference in depth of the last one may be due to the roost not having been fully excavated at the time of measurement.

Ivy-covered hawthorn trees (Illustration No. 2). Frequent.

Ivy on gable of house. Three.

Ivy-covered fork of sapling. Three.

Ivy-covered fork of tree. Two.

Ivy-covered stump. One.

Between thick ivy stems around a branch. One.

Short ivy around a sapling. One.

Garden arch covered with ivy and creepers. One.

Crevice between masonry and corrugated-iron roof. Two.

Haystack. One. Hole c. 3 ins. deep.

Hole in hollow end of snapped-off branch. One.

Hole excavated by bird in dry mat of dead ivy on a gable. One. Depth 2 $\frac{1}{2}$ ins. Entrance 2 $\frac{1}{2}$ ins. \times 2 $\frac{1}{4}$ ins.

On ledge in split of rotting stump. One. Ledge 3 ins. front to rear, 2 ins. broad.

Branches of *Cupressus macrocarpa*. One.

Old Wren's nest. One.

Thick hedgerow. One.

Reference to the use of holes in *Sequoias* has been made by Rankin [2] and in cedars and old nests of birds of the British race, by Dunsheath and Doncaster [1].

Height of roosts from ground.—The average height of twenty roosts was 9 feet 10 inches. Maximuni, 21 feet in one case, in ivy on the gable of a building. Minimum, between two and three feet in two cases, in ivy-covered forks of holly bushes.

In addition there were several at c. 15 feet in ivy-covered trees in which it was not possible to obtain completely accurate measurement.

In one instance a marked bird was found to roost in an excavated hole 8 feet from the ground in May and June. In the following November it was roosting at c. 15 feet in an ivy-covered hawthorn tree c. 300 yards away.

Aspect.—It seems immaterial what aspect is used. Prevailing winds (S.W. here) and weather conditions do not seem to have any marked effect. I have note of the following aspects.

N. 2.	S. 2.	E. 3.	W. 3.
N.W. 2.	S.W. 2.		
	S.E. 1.		

TIME OF GOING TO ROOST.

From 13 roosts at which I have made observations, the following four are given in detail. They were used fairly consistently (roosts are very frequently changed or deserted, often only temporarily), and they bring out one or two points of interest.

As in no case was a marked bird constantly observed there is no proof that the same bird would return after a temporary desertion of a roost, though there was in most cases evidence pointing to the probability. Marking a bird at the roost always entails desertion with consequent breaking of any sequence of observations, and with the added difficulty of finding the new roost. All times given are in relation to local sunset.

ROOST I.

Date	Time	Weather Conditions
10-12-42	2 mins. before	Fair.
9-4-43	3 mins. before	Fair.
13-4-43	5 mins. before	Very fine; mild.
22-4-43	16 mins. before	Very fine; warm.
23-4-43	14 mins. before	Very fine; mild.
25-4-43	19 mins. before	Full gale; rain.

This roost was not seen to be in use again until 1945. Impossible to say if the same bird returned, but the roost was in exactly the same place. The difference of time in relation to sunset is, however, strange, though on the September dates sunset is approximately half an hour earlier than on the April dates given.

<i>Date</i>	<i>Time</i>	<i>Weather Conditions</i>
14-9-45	10 mins. after	Bright, warm, occasional showers.
15-9-45	Not in use	Gloomy, drizzle, strong wind, S.E.
18-9-45	19 mins. after	Calm, warm, bright.
20-9-45	16 mins. after	Cool, strong wind, S.
10-10-45	33 mins. after	Bright, warm, calm. This is an exceptionally late record.
12-10-45	Not in use.	

Roost II.

<i>Date</i>	<i>Time</i>	<i>Weather Conditions</i>
4-1-43	5 mins. before	Fair.
5-1-43	5 mins. before	Bright, Fine.
6-1-43	2 mins. before	Dull, foggy.
12-1-43	Not in use	Dull, foggy.
14-1-43	In roost before sunset.	Thick fog.
26-1-43	5 mins. after	Bright.
31-1-43	Already in roost 19 mins. before sunset.	Fine, bright. Great Tits and Blue Tits were still abroad 30 mins. later.
2-2-43	Roost finally vacated.	

The same bird used this roost throughout. Note that on the evenings of January 26th and 31st, there was considerable variation in time of roosting under similar weather conditions.

Roost III.

<i>Date</i>	<i>Time</i>	<i>Weather Conditions</i>
10-10-45	23 mins. after	Calm, bright, cool.
11-10-45	24 mins. after	Calm, bright, cool.
12-10-45	23 mins. after	Calm, overcast, warm.
13-10-45	20 mins. after	Overcast, rather cool, light breeze, S.E.
A bird roosting 4 paces distant entered its roost 12 mins. after sunset on 13th.		
16-10-45	Not in use	Overcast, cool, light breeze, S.E.
19-10-45	19 mins. after	Very gloomy, wind moderate, S.E.
24-10-45	Not in use	Gale W. High wind and rain on succeeding days. Roost very sheltered. From October 28th, weather was fine, calm.
4-11-45	30½ mins. after	Still, warm, clear.
6-11-45	24 mins. after	Still, warm, clear.
10-11-45	Not in use.	

It is noteworthy that on November 4th, when the bird went to roost at the rather unusually late time (30½ minutes after sunset), its companion with a roost four paces away went into its roost late also (30 minutes after sunset). On most days when both were noted there was never more than one minute's difference between their respective times of going to roost.

These birds, though very regular in their time of going to roost, are noticeably later than the average.

Roost IV.

<i>Date</i>	<i>Time</i>	<i>Weather Conditions</i>
8-8-45	19 mins. before	Still, fine, clear, warm.
2-9-45	20 mins. before	Still, fine, clear, warm.
8-9-45	18 mins. before	Calm, clear, cool.

Date	Time	Weather Conditions
12-9-45	Not in use.	
21-9-45	8 mins. before	Overcast, violent rain squalls from S.
22-9-45	Not in use.	
18-1-46	3 mins. after	Freezing after a bright, still day.
19-1-46	3 mins. after	Snow on the ground and more threatening.
22-1-46	3 mins. after	Mild, still, overcast, with showers.
28-1-46	3 mins. after	Gloomy, overcast, mild, still.
29-1-46	Ivy torn from wall by gale.	

It is impossible to say whether, after the break on September 22nd, it was the same bird which took up this roost again on January 18th. There is a distinct probability, as the roost was in a well marked territory; moreover it seems unlikely that two different birds would select the same identical spot on a tall wall, thickly covered with ivy. The January timings show a remarkable regularity in spite of changing sunset-hour and changeable weather.

I have record of a bird going into its roost 13 minutes *before* sunset on a bright, still, warm evening. The next day the same bird entered its roost three minutes *after* sunset in overcast weather with a strong wind. I have a number of other records showing this apparent disregard of weather conditions.

In 28 cases birds went to roost *after* sunset. Average $15\frac{1}{2}$ minutes after.

In 22 cases birds went to roost *before* sunset. Average $10\frac{1}{2}$ minutes before. Latest after sunset, 33 minutes in one case. Earliest before sunset, 26 minutes in one case.

TIME OF LEAVING ROOST.

I have comparatively few records and these are for December and January. Birds are more regular in leaving than in going into roosts; 24 minutes before sunrise is the average, with extremes of 32 and 19 minutes before.

GENERAL.

SEDENTARY HABITS.

My observations go to show that Coal-Tits are, at any rate in some cases, markedly sedentary and also that these sedentary birds are restricted as regards territory even in winter.

The diagram of observations of a marked adult bird over a period of one year and eleven months illustrates these points.

There were numerous other occasions on which a bird was heard singing or calling, or was seen in high trees in this territory, though it was not possible to see the ring. I had no doubt that it was this particular bird, as on any occasion similar to above when opportunity to identify occurred, the bird was seen to be the marked one. The nest, though in the territory, was not discovered in 1943 nor 1944.

For another marked adult I have eighteen records covering one year and two months in a territory 538 paces by 125 paces with an average width of only 15 paces.

Shapes of territories naturally depend considerably on the layout of cover. I have found that between one year and another, territorial ground may be gained to one flank, but it is then lost to the other flank.

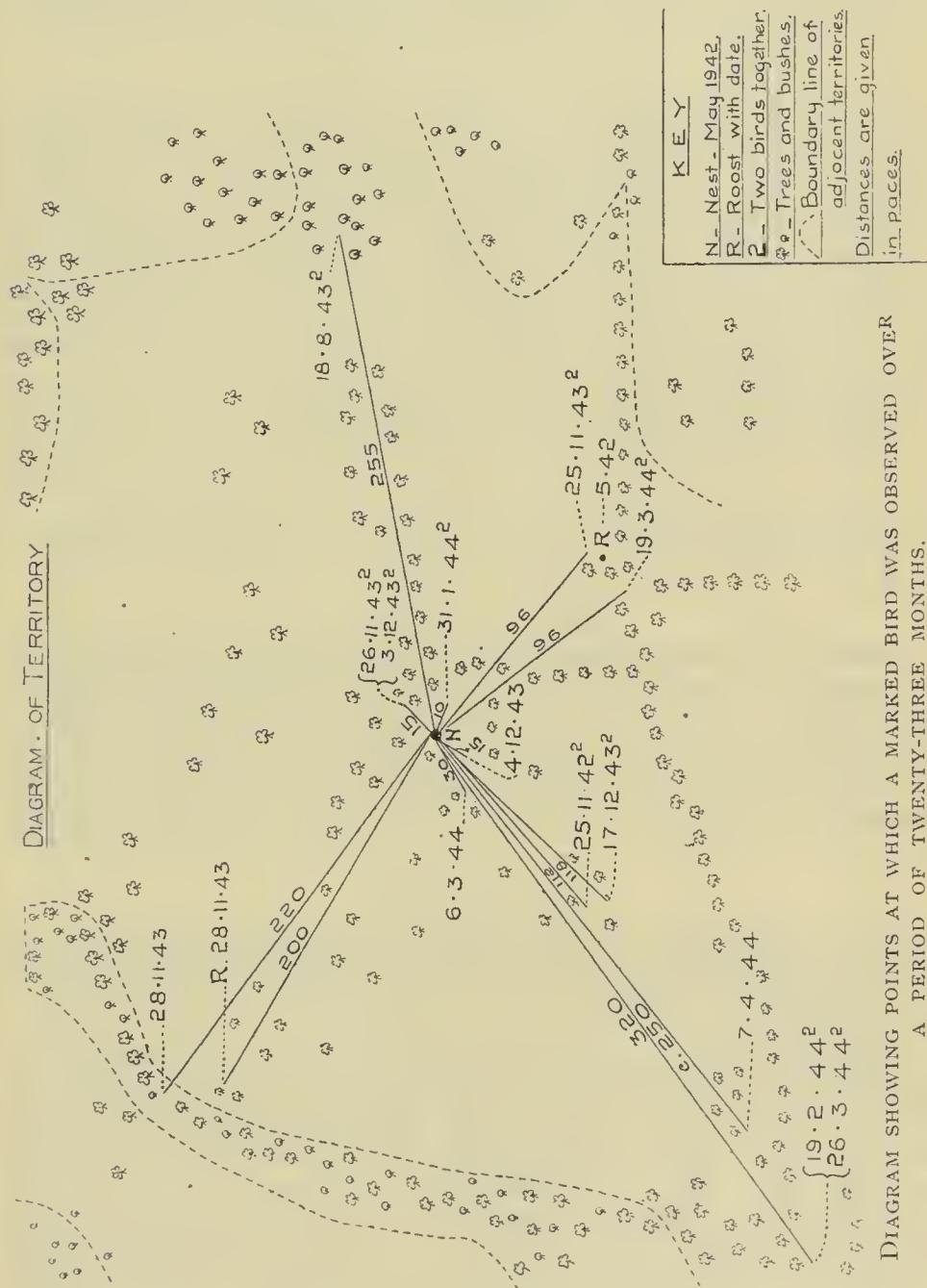


DIAGRAM SHOWING POINTS AT WHICH A MARKED BIRD WAS OBSERVED OVER
A PERIOD OF TWENTY-THREE MONTHS.

Both the marked birds disappeared entirely at the end of the periods mentioned.

In six other cases unmarked pairs could always be found in what was obviously their restricted territory.

Mr. W. A. Wallace showed me two restricted areas in his woods at Oldhead in which he could always find, within a short space of time, one or a pair of Coal-Tits. This I was able to confirm. These territories seem to be defended by song in winter (see under Song Period), but no exception is taken to other Coal-Tits passing through the territory when members of the "hunting bands" of small birds.

NEST-SITES.

It may be interesting to compare the heights of nesting-sites in relation to those of roosting-sites. The latter I have shown to average 9 feet 10 inches above ground level, with a minimum of 2 feet to 3 feet. Ten nests of which I have noted averaged 3 feet 2 inches above ground level, with a maximum height of 5 feet 2 inches, above which I have never found a nest.* Nests are not infrequently placed below ground level. In one such case, where the male was marked, it was found that the bird had its roost 96 paces distant and at a height of 8 feet.

Another male roosted 13 feet above ground 23 paces from its nest, which was 1 foot 8 inches above ground.

In each case where nest and roost has been found both have been in territory as defined not only in summer, but also in winter.

The most favoured site in this locality is a hole in an unmortared wall.

NESTING MATERIALS.

Ussher [3] found feathers used very sparingly. I find that there are usually not more than two or three and that most nests contain no feathers. I have one record of a nest containing eight feathers, six white, two black. Otherwise material is as given in *The Handbook*, Vol. i, p. 256, with the addition in one case of some dried stems of bracken, and in another of a small proportion of thistle-down.

SONG-PERIOD.

Ussher [3] considered that the song sometimes commenced at the end of January. He believed that, although heard until the end of June, it was improbable that the song of nesting individuals was continuous.

The period as observed in the north of Ireland by Campbell [4] conforms generally to Ussher's observation. Benson [5], quoting Kinahan's observations near Dublin, gave the song period inclusive from January to June. I do not find that these observations apply normally in Co. Mayo. Marked birds have been observed singing in every month. Song is quite usual by these birds from mid-December until the end of February. There is then usually much increase with periodical slackening in accordance with weather conditions. From mid-March output increases, more so in April. Song may be heard in short bursts through May, June and July.

*Since writing this I have found a nest at a height of 16 feet 6 ins. in a deep cavity where a rotten branch had fallen away. I consider both the height and the site quite abnormal.

All through August in some years there is occasional song. Marked individuals that were singing in winter did so constantly in May.

I have (still referring to marked birds) one note "silence, birds feeding young from May 10th to May 17th," but on occasions I heard song when there were young in the nest.

The song-period of Coal-Tits in general, taken as a whole, is much in accordance with the pattern given in *The Handbook*, Vol. i, p. xl. except that song is normally quite exceptional in September and early October. In late winter and early spring especially, though indeed at all times to some extent, the volume of song is much dependent on birds of adjacent territories being close to one another. Meeting on the boundary causes much song until one or the other bird retires farther into its own territory, when song will cease.

A bird whose territory is seldom invaded or which spends much time in the centre of its territory is seldom heard to sing. It follows that in areas where population is dense song is more frequent. Early in spring most song is delivered from the top-most branches of trees and bushes. Later Coal-Tits sing as they work along hedgerows or from tree to tree. Song in flight is frequent, especially in spring and during aerial chases.

FOOD.

During September and October, Coal-Tits habitually hide beech-mast and other nuts and seeds, though I have found no case of storing them together. A species of *Chironomus* is a favourite food in spring, caught in short hawking flights.

I can confirm Ussher's observation that it feeds on alder seeds. I have seen Coal-Tits taking grains of oats and possibly wheat from the ground when threshing of these cereals had recently taken place. I have seen birds taking grains, one at a time, from stacks of oats. The grain is carried to a distance to be eaten, as is the normal procedure when feeding on beech-mast. Seeds are also extracted from sallow catkins.

MISCELLANEOUS.

All my observations go to show that the sedentary individuals at any rate, remain paired for life. Pairs keep together, or when widely separated, regain contact by the use of the call-note.

As in the case of the British Coal-Tit, as described by Nethersole-Thompson [6], I find that both sexes prospect for nesting-sites.

I have several records of birds hovering to obtain insects from the leaves of trees and from tall grasses.

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NOTES ON NEST-SITES OF THE OYSTER-CATCHER
AND THE LONG-EARED OWL AS A HOLE BREEDER

BY

FR. HAVERSCHMIDT.

(Plates 44-46).

THE OYSTER-CATCHER.

THE Oyster-catcher (*Hæmatopus ostralegus*) is a bird that sometimes uses strange nesting-places.

On the isle of Texel a pair bred from 1917-1934 on the thatched roof of a barn as stated by Drijver (*Texel, het vogeleiland*, p. 276) and in 1914 a nest was found on the island of Rottum on the top of a wooden pole about two metres above the ground (*Ardea*, 3, pp. 127-130). It seems that the Oyster-catcher has a strong liking for nesting on high places, as in Holland records of breeding on the top of pollard willows are accumulating year by year. In *Limosa*, 12, p. 132, there is a note about a pair breeding in 1937-1939 on a pollard willow near Kampen, about one metre above the ground.

From Friesland one such case was reported to me in 1943 and in 1944, but in both cases I came too late to see the nests, as the eggs had been sucked, apparently by crows. In 1945 a fisherman told me that he knew two nests of Oyster-catchers on the top of pollard willows quite near each other near Hardegarijp. When I visited the place on June 12th one of them proved to have been robbed by crows, but the second one happily was still intact. There were two pollard willows each at a height of about 1.75 metres standing at a distance of about two metres from each other amidst extensive grasslands so characteristic of Friesland. In the same neighbourhood, but not on the same tree an Oyster-catcher had nested on a tree in 1944.

It was a strange sight on approaching the trees to see an Oyster-catcher rising obviously from its eggs on the tree and then flying away. The top of this particular tree was overgrown with grass and in a small depression in it lay three eggs (Plate 44). The bird could easily be photographed, but it had the tiresome habit of sitting always with its back turned towards the camera, so that I had to content myself with a few pictures of the bird on the point of settling on its nest (Plate 45). The eggs hatched safely and the chicks left their high birthplace no doubt by simply tumbling down into the grass beneath the tree.

In Holland the Oyster-catcher is an adaptable species and it not only nests on or near the seashore, but it is spreading deeper and deeper into the country hundreds of kilometres from the sea and it is becoming steadily an inland bird. It now breeds regularly in many localities where it was quite unknown twenty or more years ago. At the same time it is not at all particular in its choice of nesting places. It does not only nest in grasslands like the Lapwing

or the Black-tailed Godwit, but breeds freely on arable land and even among bushes, shrubbery and in copses.

On June 17th, 1927, I found a nest with three eggs among high bushes in the disused duck decoy on the isle of Vlieland, and on June 15th, 1938, I watched a nest with three eggs in a copse in a fine old beech wood near Vogelenzang. It was a very strange sight to see the Oyster-catchers walking in an avenue of magnificent old beech trees.

Again in May 1944, I found in a copse near Wolvega a nest of an Oyster-catcher with four eggs. The accompanying photographs (Plates 44, 45) give an idea of the types of landscape the birds were nesting in and of the nest itself, which was placed actually on the stump of a felled oak. In one of the trees at the background a pair of Hobbies (*Falco subbuteo*) was nesting in an old crow's nest, truly remarkable neighbours for Oyster-catchers.

This particular nest contained four eggs, as is seen in Plate 44. In *The Handbook of British Birds*, Vol. iv, p. 417, it is stated that four eggs occur from time to time in Britain. In Holland clutches of four are quite common, though the majority of nests contain three eggs. From 70 nests with eggs inspected in recent years seven had four eggs, forty-two had three eggs, nineteen two eggs and two one egg only.

THE LONG-EARED OWL.

In *The Handbook of British Birds*, Vol. ii (p. 329) no mention is made of the casual breeding in hollow trees of the Long-eared Owl (*Asio o. otus*), so it seems that this has never been observed in Great Britain.

Niethammer (1938) quotes Hartert (1912) and Demuth (1885), and there are some more old records of hole-breeding Long-eared Owls from the Continent, from which, however, it does not seem to be always quite certain that there has not been confusion with the Tawny Owl (*Strix aluco*). Furthermore the North American Long-eared Owl (*Asio otus wilsonianus*) has been found nesting once in a hollow tree by Bendire, as quoted by Bent (1938).

In Holland, though the actual nesting in holes of trees has never been established, the Long-eared Owl seems to nest not uncommonly in baskets fixed in trees to be used as nesting places by semi-wild Mallard (*Anas platyrhyncha*).

It is a century-old custom—especially in Friesland—to put up baskets of straw in trees near farmhouses, in order to induce semi-wild Mallard to lay their eggs in them. Often there are several such baskets together in one tree. The eggs are collected for food and a second clutch is left to hatch. In duck decoys great quantities of these baskets are fixed in trees and bushes and even on the ground as nesting-places for the decoy ducks. There are two types of baskets. The one nearly exclusively in use in Friesland is plaited of yellow straw (just like a bee-hive). The entrance is rather wide, then it narrows and ends in a wide bottle. The other type, more in use in

the middle and in the west of the country, is plaited of osier stems and therefore is much more durable than the straw one, which becomes worn in a couple of years. The model of the osier type is somewhat different, as it lacks the wide entrance and is more of the shape of a bottle. Payne Gallwey (1886) (p. 200) gives a rather crude picture of the osier type.

In duck decoys—always paradises for many breeding birds—but also in copses, large gardens and estates, several species of birds use these baskets for nesting. Besides the small hole-breeding birds, the Stock-Dove (*Columba oenas*) is a regular breeder in these baskets, as is the Jackdaw (*Corvus monedula*). The Kestrel (*Falco tinnunculus*) also very often takes possession of these baskets to lay its eggs in. Now it is of interest that the Long-eared Owl has been found several times nesting in these baskets, so that it seems to be quite a normal habit for these birds to nest in these artificial holes.

In May, 1943, I found on an estate not far from Leeuwarden a Long-eared Owl sitting on four eggs in a basket (of straw) in a big lime tree. There were three baskets in that particular tree (Plate 46). In the basket on the upper right a Kestrel had been nesting, but it was destroyed in a storm; the Long-eared Owl was nesting in the basket at the left. On my inspecting its contents again on May 25th, the bird remained motionless on its eggs, so that I was able to take several photographs. The light was very poor under the thick foliage of the trees, as the bird was sitting in the back of the rather deep hole. I could distinguish on the focussing screen nothing else but its golden-orange irides and as the distance between the camera and the sitting bird was so short the edge of the basket was quite out of focus and being much lighter than the inside, this part was much over-exposed. With F.32 I made an exposure of about two minutes and all this time the bird remained quite motionless on its eggs, not even blinking an eye (Fig.). On June 4th there were four small young in the basket and the old bird stayed on the young when I inspected them, so that I was able to take some more photographs.

On the same estate and probably in the same tree, if not in the same basket, a Long-eared Owl was also nesting in 1942, according to de Vries (1942). In 1944, however, this basket was not used. When put up in proper positions these baskets may prove to be very good artificial nesting-places for the larger hole-breeding species.

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IRISH COAL-TIT.

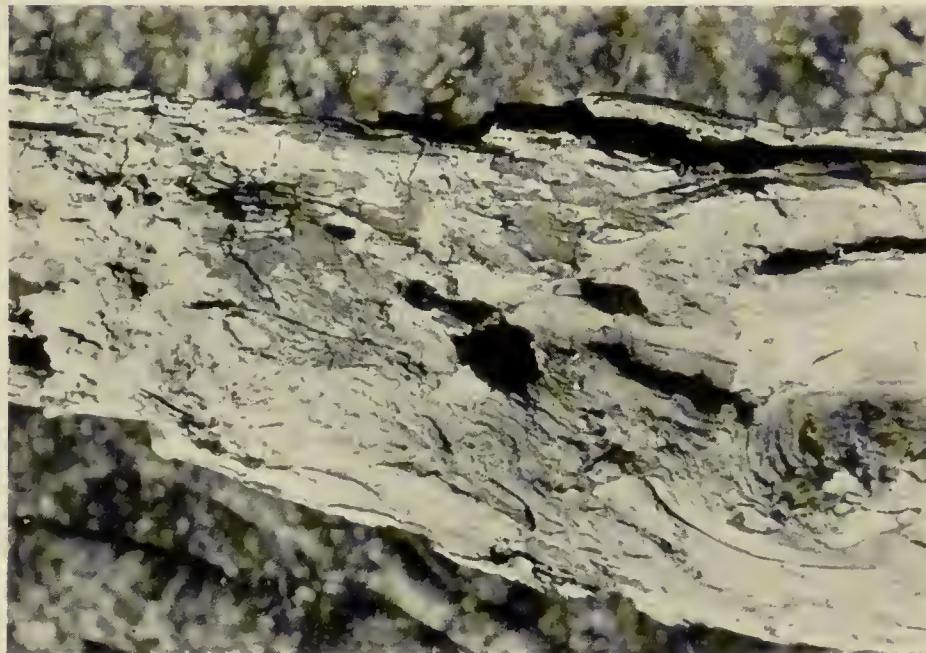
TYPICAL IVY-COVERED HAWTHORN USED FOR ROOSTING :
ROOST WAS IN SHADED CAVITY NEAR CENTRE.

(Photographed by J. S. Barlee).

IRISH COAL-TIT.

TYPICAL ROOSTING HOLE IN ROTTING ASH TREE,
II FEET ABOVE GROUND.

(Photographed by J. S. Barlee).





OYSTER-CATCHER.

NEST WITH THREE EGGS ON TOP OF POLLARD WILLOW,

JUNE 12TH, 1945.

(Photographed by Fr. Haverschmidt).

OYSTER-CATCHER.

NEST IN COPSE, JUNE 14TH, 1944.

(Photographed by Fr. Haverschmidt).



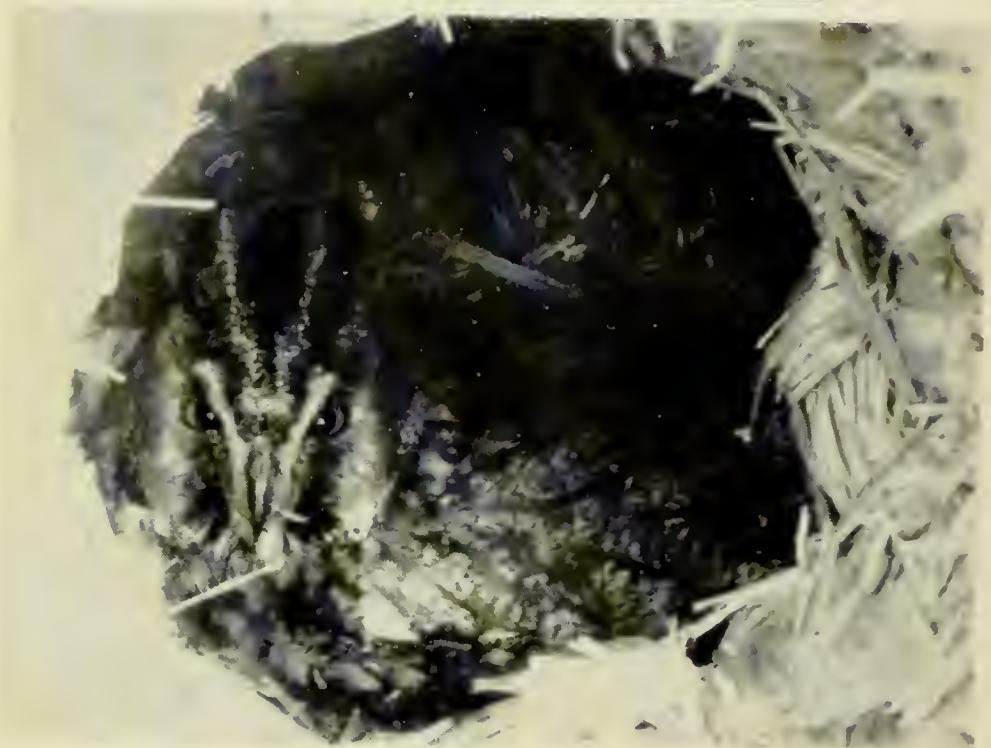


OYSTER-CATCHER.

UPPER.—BIRD ABOUT TO SETTLE ON NEST ON POLLARD WILLOW,
JUNE 12TH, 1945.

LOWER.—NESTING IN COPSE, MAY 25TH, 1944.

(Photographed by Fr. Haverschmidt).



LONG-EARED OWL.

UPPER.—LIME TREE WITH SIX NESTING-BASKETS FOR DUCKS: THE OWL WAS
NESTING IN THE BASKET ON THE LEFT.

LOWER.—LONG-EARED OWL INCUBATING IN NESTING-BASKET FOR DUCKS.
MAY, 25TH, 1945.

(Photographed by Fr. Haverschmidt).

VARIATIONS IN CLUTCH SIZE AND SOME NESTING SUCCESS DATA

BY

R. A. W. REYNOLDS.

SOME time ago Mr. David Lack remarked to me that during the earlier months of the season birds tended to lay smaller clutches than in the later months. My observations in Devonshire show the following results.

BLACKBIRD (*Turdus m. merula*)

	March			April			May			June		
	Clutches	of		Clutches	of		Clutches	of		Clutches	of	
	3	4	5	3	4	5	3	4	5	3	4	5
1939	...	2	1	—	10	21	2	—	7	—	—	1
1940	...	3	5	—	7	19	—	—	4	1	—	1
1941	...	—	—	—	3	14	—	—	2	—	—	—
1942	...	1	2	—	—	11	—	—	4	—	—	—
1943	...	—	12	—	2	7	—	—	4	—	—	2
TOTAL	...	6	20	—	22	72	2	—	21	1	—	4

SONG-THRUSH (*Turdus e. ericetorum*)

	1939	...	2	1	—	—	16	1	—	2	—	—	1	1
	1940	...	1	14	2	3	17	1	—	2	2	—	—	—
	1941	...	—	7	2	1	13	—	—	—	—	—	—	—
	1942	...	2	9	—	—	4	—	1	2	—	—	—	—
	1943	...	3	12	—	1	5	—	—	6	—	—	1	—
TOTAL	...		8	43	4	5	55	2	1	12	2	—	2	1

SUMMARY.

	BLACKBIRD				SONG-THRUSH			
	No of eggs in Clutch				No. of eggs in Clutch			
	3	4	5	Average	3	4	5	Average
March and April }	23%	75%	2%	3.8	11%	84%	5%	3.9
May and June }	—	93%	7%	4.1	6%	78%	17%	4.1

CONCLUSION.

Hence C/3 is not uncommon in the early part of the season, whilst in May and June only one C/3 was recorded among 45 nests observed. On the other hand, C/5 is rare in March and April, but not very uncommon in May and June. A Blackbird with C/6 appears on my records for March 1940—possibly two hens laid in the same nest.

Species.	No. of nests.	No. of eggs laid	% hatched	% fledged of hatched	% fledged of laid
Chaffinch <i>(Fringilla cælebs)</i>	35	137	77	94	73
Mistle-Thrush <i>(Turdus viscivorus)</i>	23	85	85	100	85
Song-Thrush <i>(Turdus ericetorum)</i>	110	410	76	60	73
Blackbird <i>(Turdus merula)</i>	134	493	72	98	71
Robin <i>(Erithacus rubecula)</i>	38	157	69	94	63
Hedge-Sparrow <i>(Prunella modularis)</i>	27	97	73	89	65
Buzzard <i>(Buteo buteo)</i>	33	93	70	91	63
Lapwing <i>(Vanellus vanellus)</i>	12	47	85	95	81

NESTS WITH EGGS 1939-43

	No. of nests with eggs	% complete success	% failure	% partial success
Chaffinch <i>(Fringilla cælebs)</i>	40	80	20	—
Mistle-Thrush <i>(Turdus viscivorus)</i>	28	64	21	14
Song-Thrush <i>(Turdus ericetorum)</i>	110	67	24	9
Blackbird <i>(Turdus merula)</i>	134	65	25	10
Hedge-Sparrow <i>(Prunella modularis)</i>	27	63	37	—
Robin <i>(Erithacus rubecula)</i>	32	44	28	28
Buzzard <i>(Buteo buteo)</i>	33	67	27	6
Lapwing <i>(Vanellus vanellus)</i>	10	70	—	30

NOTE.—Some of the above nests were found during the laying period, others not till later.

NESTS WITH YOUNG 1939-1943

	No. of nests with young	% complete success	% failure	% partial success
Chaffinch <i>(Fringilla cœlebs)</i>	32	94	6	—
Mistle-Thrush <i>(Turdus viscivorus)</i>	22	100	—	—
Song-Thrush <i>(Turdus ericetorum)</i>	84	95	5	—
Blackbird <i>(Turdus merula)</i>	101	96	3	1
Hedge-Sparrow <i>(Prunella modularis)</i>	17	88	12	—
Robin <i>(Erithacus rubecula)</i>	23	78	17	.4
Buzzard <i>(Buteo buteo)</i>	24	79	8	13
Lapwing <i>(Vanellus vanellus)</i>	10	100	—	—

NOTES.

RAVEN NESTING IN A ROOKERY.

ON March 10th, 1946, I flushed a Raven (*Corvus c. corax*) from a nest at the top of a tall pine in a conifer wood about five miles from Cardiff. In view of previous records of this species nesting in rookeries (*antea*, Vol. xxxviii, pp. 53 and 120) and in a heronry (*antea*, Vol. xxxix, p. 212) it may be of interest to record that in this case there were actually some nests of the Rook (*Corvus f. frugilegus*) in the same tree, for the wood is the site of a colony recorded as of over 100 nests in 1945, when Ravens were also noticed there. Unfortunately I was not able to prove that these nests were used in 1946; on subsequent visits (March 26th and April 20th) they did not appear to be and the focus of the rookery seemed to have shifted away from this part of the wood, but whether this was in any way due to the Ravens I could not say. I did, however, see a Raven being furiously mobbed by Rooks on one occasion, the chase taking place in and out of the trees of the rookery.

BRUCE CAMPBELL.

RAVEN NESTING IN A HERONRY.

THE following affords a parallel to the record by G. Hughes Onslow (*antea*, p. 212).

In company with H. G. Hurrell I visited a small heronry near Yealminster, S. Devon, on April 18th, 1945, and found a pair of Ravens (*Corvus c. corax*) nesting thiere. The Herons there build in Scots pines, and the Raven's nest was also in a Scots pine, with Herons nesting in immediately adjacent trees. There were seven occupied Herons' nests, which at the time of our visit contained either eggs or newly hatched young.

It was the vigorous clamour of the young Ravens that first drew our attention to the nest's not being a Heron's. This noisiness, in our experience, is a most unusual feature in the behaviour of the species: neither of us has on any other occasion found nestling Ravens other than silent when closely approached.

Two days afterwards the nest was visited by my son with a friend who was able to climb to it. It then contained two well advanced young (almost ready to fly), which on this occasion were silent when the nesting-site was approached. O. D. HUNT.

[Commander Hughes Onslow informs us that four young birds were successfully fledged from the nest recorded by him and were scrambling about amongst the surrounding branches on May 11th. On May 24th he could not see any of the young amongst the thick foliage, but they were no doubt present, as the parents displayed considerable anxiety.—EDS.]

NEST SANITATION AND EGG-SHELL DISPOSAL OF CHOUGH.

As this is an uncommon species it may be useful to corroborate already published information under these heads (*antea*, Vol. xxxiv,

p. 227 and Vol. xxxv, p. 195); while watching a pair of Choughs (*Pyrrhocorax p. pyrrhocorax*) at their nest in a North Wales quarry on May 26th, 1946, I saw faecal sacs removed twice in about five minutes and carried out of sight round the edge of the quarry. Later I picked up the top of an egg-shell about two hundred yards from the nest.

BRUCE CAMPBELL.

FOOD OF BULLFINCH.

THE *Handbook* does not explicitly give birch seed amongst the food of this species, but on December 23rd, 1942, near Caerleon, Monmouthshire, I watched a party of British Bullfinches (*Pyrrhula p. nesa*) feeding on the seed "cones" of this tree. Their method was to perch a few inches from the "cone" and then stretch out towards it, often hanging almost upside-down. They gave the cone a series of rapid pecks before pausing to look around, when the beak would be hidden in a mass of seed-wings, which were falling to the ground all the time in a fine shower. The cone was stripped in this way, except for a small "head" at the end. I was reminded of this incident in July, 1946, when Bullfinches appeared in the birch trees of my Cardiff garden and immediately afterwards I found whole cones, still green, but attacked in much the same way, underneath the trees.

BRUCE CAMPBELL.

UNRECORDED POSTURE OF GREAT TIT.

ON May 11th, 1946, I saw a display by a Great Tit (*Parus major newtoni*) which I think is worth recording. In my garden two pairs of Great Tits occupied nest-boxes about 40 feet apart, but their eggs were thrown out by Wrynecks. From one of these boxes the Wrynecks had also ejected the nest, and on the date mentioned the tits which had been dispossessed visited this box with the apparent intention of re-occupying it. The Wrynecks, although audible, did not appear or interfere, but another pair of Great Tits immediately started a vigorous battle for possession of the box. All four birds took part and there was much chasing and "scolding." Suddenly one of the birds flew to a piece of wire-netting and, hanging upright against it with its back to the others, spread its wings to their widest extent. It hung thus for about ten seconds. A few moments later it repeated this display hanging against an upright post. On each occasion the tail was partly spread and the head turned slightly round as though to watch the other birds. The bill appeared to be open.

M. D. ENGLAND.

NESTING OF WILLOW-TIT IN GLAMORGAN.

ON April 1st, 1946, near Llanishen Reservoir, Cardiff, I watched two British Willow-Tits (*Parus atricapillus kleinschmidti*) at work on a hole at the top of a rotten birch stump, about 12 feet high. This nest was watched throughout the breeding cycle by several observers, including Mr. G. C. S. Ingram and Col. H. M. Salmon, who informed me that it was the first breeding record for Glamorgan.

BRUCE CAMPBELL.

SPOTTED FLYCATCHER FEEDING FIRST BROOD WHILE INCUBATING SECOND CLUTCH OF EGGS.

ON June 18th, 1945, when in the East Riding of Yorkshire, I found a Spotted Flycatcher (*Muscicapa s. striata*) nest in the cleft of a tree, containing four half-fledged young and one egg.

Passing the same spot three weeks later I noticed the young being fed in a tree some ten yards from the nest, but one parent bird kept flying back to the nest, and on investigating I discovered that a second clutch had been laid; all five eggs were a very pale blue with no markings whatever, whereas the first egg was typical.

I was able to watch the birds for some time, and could easily see the one which spent most of the time on the nest, fly from it towards an adjacent water-tank, where it would snap up some of the dozens of flies which rested on it, fly with them to the tree in which the young were perched and feed the flies to them. The other adult was busy catching insects and feeding the young, but this bird also would visit the nest in the absence of the other, though only for a few moments. I am positive only two adult birds were present.

I visited the nest two weeks later and found four dead young and one egg, but no sign of the adult birds or first brood.

H. E. WOODS.

[An odd feature of this case is the different colour of the eggs of the two clutches. We have always assumed that the blue variety of Spotted Flycatchers' eggs were laid by different individuals from those producing the normal type, and this would suggest that the second clutch was laid by a different hen, in spite of her using the same nest and assisting in feeding the first brood. But since the blue eggs are due to a pigment deficiency it is, we suppose, possible that such a condition might develop after a first clutch had been laid. Unfortunately the physiology of egg-pigments is a subject about which not as much is known as could be desired.—EDS.]

PIED FLYCATCHER BREEDING IN AYRSHIRE.

ON June 23rd, 1946, whilst motoring down the Stinchar Valley I saw a male Pied Flycatcher (*Muscicapa h. hypoleuca*) sitting on a wire fence at the roadside. Shortly afterwards the hen appeared and it was evident that they were feeding young. I was unable to locate the nest until the following day, when my wife and I saw both birds repeatedly taking food into a small hole some 15 feet up an ash tree and twice heard the young birds calling from within.

There appear to be very few recorded instances of these birds breeding in S. Ayrshire and I have been unable to trace any since 1907.

G. HUGHES ONSLOW.

FIELDFARES IN DERBYSHIRE IN JUNE.

I SHOULD like to record the presence of four Fieldfares (*Turdus pilaris*) on each of the two evenings of June 19th and 20th and five on June 21st at a hamlet, Wigley, near Chesterfield, about a thousand feet above sea level.

My wife and I stayed in the vicinity for half an hour and made certain of the identification. Their colouring and stance were unmistakable. Our nearest distance to them was about twenty-five yards and we had with us 5x and 6x binoculars. We heard the characteristic call of "chayk" several times. On the second evening the birds seemed more wary, but stayed fairly near us for a period of five minutes. The third evening was practically a repetition of the first except that an extra bird was counted. We again visited Wigley on June 25th and subsequently, but did not see the birds again.

N. HARWOOD.

BLACKBIRDS ATTEMPTING TO REAR FOUR BROODS FROM THE SAME NEST.

I CAN trace no instance of Blackbirds (*Turdus m. merula*) rearing four broods from the same nest and the following observations on what appears to be an attempt at this may be worthy of placing on record.

In late March, 1946, a nest was found in the garden of my home at Christchurch, Hants. It was built in a fairly exposed position in a fork in a macrocarpa hedge about six feet from the ground. Three eggs were laid and these hatched on April 12th; on April 19th the young birds left the nest and during the following two days were fed by both parents in the vicinity. Two disappeared on the third day—probable victims of a cat; the remaining bird was seen for some days in the neighbourhood of the garden.

Unfortunately no record was made of the dates of laying of the second clutch, which numbered four. Hatching occurred on May 15th and 16th and the young birds left the nest on the morning of May 23rd. Nothing was subsequently seen of this brood.

The first egg of the third clutch was laid on May 26th and one on each of the following days until they numbered four. The hen sat very close until the evening of June 6th, but on the morning of the following day the eggs were cold and she was absent throughout the day. Nothing was seen of her until June 9th, when she was observed on several occasions searching for food on a lawn near the nest, but she was not seen to approach it. Her appearance at this period was very dishevelled and she showed some signs of suffering from diarrhoea. On subsequent days her appearance improved. During this period the male bird was observed at the nest on a few occasions, but was not seen to attempt incubation.

On June 13th she commenced to lay another clutch, but after laying a second egg on the following day she deserted. This may or may not have been due to the fact that a member of my family, prompted by the well-intentioned idea of assisting incubation of the fresh clutch, removed two eggs of the third. During the remainder of June both birds were seen very frequently daily and on a few occasions the hen was observed in the vicinity of the nest.

I have no doubt that the observations recorded above refer to the same pair of birds, as they became extremely confiding and their

routine behaviour was always the same. No repairing or relining of the nest appears to have been attempted, but after its hard usage it remained in good condition.

DONALD A. TAYLOR.

EARLY SINGING OF JUVENILE HEDGE-SPARROW.

ON June 2nd, 1946, at 8.30 p.m. (B.S.T.) in my garden at Dunstable, I heard and watched at 15 yards through field-glasses a juvenile Hedge-Sparrow (*Prunella modularis occidentalis*), uttering several disjointed versions of the normal song. Each song lasted 2-3 seconds, and was clearly audible at 20 yards range.

At 8.15 p.m. the following day, a juvenile Hedge-Sparrow was heard and watched through glasses at 10 yards range. The attempts were much fainter and more disjointed.

It may be of interest to add that the adult Hedge-Sparrows had not sung since the brood to which, presumably, the above juvenile belonged, had left the nest.

B. H. ALABASTER.

GREEN WOODPECKER IN DUMFRIESSHIRE.

ABOUT the end of March, 1946, my brother and I had a good and unmistakable view of a Green Woodpecker (*Picus viridis pluvius*) at Eaglesfield, Dumfriesshire; it was also heard calling. It was seen by one or more of us in much the same locality in April, and towards the end of May I had a very good view indeed as the bird flew past only about 25 yards from me, and then sat at a distance of about 30 yards for nearly ten minutes, calling and in full view.

The bird finally flew off in one direction and I walked away in another. Ten minutes later I heard and saw a Green Woodpecker again at least half a mile away from where I saw the first, but I cannot say that it was a different bird.

Unfortunately we have no evidence of nesting.

BRIAN JOHNSON-FERGUSON.

GOLDEN EAGLE RUNNING.

I DOUBT whether many people could say, if asked, whether an Eagle walks or hops.

I was watching recently a male Golden Eagle (*Aquila ch. chrysætus*) standing on short green grass with sheep grazing around him. Suddenly to my surprise he ran forward about ten yards with the same motion as a feeding Starling, the feet being moved alternately, the steps short and made quickly.

The ground covered was in a slight depression and it is possible the Eagle hurried over it as he could see nothing at any distance till he had reached the rise beyond, and an Eagle always likes an uninterrupted view.

SETON GORDON.

BLACK STORK IN SCOTLAND.

ACCORDING to *The Handbook of British Birds*, Vol. III (1939) there are 20 records of the Black Stork (*Ciconia nigra*) for the British Isles, the farthest north reported being Durham.

It is, therefore, of interest to record that a bird unquestionably of this species was observed at 4 p.m. on May 29th, 1946, at Longniddry, East Lothian, a little over a mile inland from the Firth of Forth. The bird was flying very high—altitude about 1,500 ft.—but with binoculars (Ruka 15 x 50) its characters could be readily defined. The bird progressed with long, measured wing-beats, alternated by prolonged periods of gliding. The head and neck were fully extended in front and the legs behind. The white breast, belly and axillaries were readily observed, sharply demarcated from the black of the rest of the plumage. It was not possible to make out from the colour of the bill whether the bird was mature or not. It flew off in a north-easterly direction.

What was probably the same bird was observed at Port Seton, a little farther west on the coast, on June 2nd, and possibly an unidentified high-flyer seen at the same place three weeks previously was also the same.

I am quite familiar with storks flying at high altitudes, having observed them frequently in Ceylon; in the Zoological Gardens in Colombo several species were kept at semi-liberty and these spent much of their time wheeling aloft in the unbroken sunshine. My companion, who also observed the Black Stork at Longniddry, is also familiar with wild storks, not only in the East, but also in Germany and North Africa. There is little likelihood of this bird's being an escaped captive, as it is not a common menagerie species. There are no storks at present in the Scottish Zoological Park, Edinburgh.

W. C. OSMAN HILL.

GANNET FEEDING ON LARGE FISH.

THERE seems to be little recorded information as to the way a Gannet deals with a big fish. T. A. Coward writes "It brings no fish to the surface; the prey is captured and swallowed before it reappears, and, flapping heavily for a few yards, catches the breeze and sweeps easily upward." Other early writers say much the same. *The Handbook* states "Fish is swallowed under water, or if large as the bird rises to and rests for a few seconds on the surface (Lockley)."

On June 13th, 1946, I was watching sea-birds off Towan Head, Newquay, Cornwall, and noticed an adult Gannet (*Sula bassana*) flying up the west side of the headland exceptionally close inshore. When opposite to where I was standing it rose slightly in the air, and then made a practically vertical dive off some half submerged rocks. After 5-6 seconds it floundered to the surface with a large fish held crosswise in its beak, which, after a vigorous shake it threw into the air, caught and swallowed head first. Several more flaps and shakings followed, then it settled down quietly on the water, where it stayed for about four minutes before rising and heading north across the open sea. Taking the Gannet's beak as roughly four inches long I estimated the fish at about ten inches in length.

The whole performance took place at not more than thirty yards range, and I was using 8 x 30 binoculars in a perfect light.

A. V. CORNISH.

YELLOWSHANK IN DEVON.

A YELLOWSHANK (*Tringa flavipes*) was first seen on a Devon creek by Capt. E. L. Shewell on January 8th, 1946. It was subsequently watched by him and by A. V. Cornish, H. J. Craske, B. J. B. O'Dogherty, E. W. Hendy and H. S. Joyce, members of the Devon Bird-Watching & Preservation Society, on several occasions and for some hours. Capt. Shewell saw it last on February 10th and E. W. Hendy on February 13th.

The following is a description collated from the notes of these observers:—

Head and neck greyish; mantle, in good light, silvery-grey, in bad light darker, with white speckles; upper tail-coverts white, with dark bars, eyestripe white; throat and upper breast white with slight grey streaks almost forming a gorget as in juvenile female in plate 118, Vol. iv, of *The Handbook*; flanks and underparts white; axillaries white, with slight dark markings; wings greyish-brown, speckled white; no white wing-bar; legs bright yellow in good light, slightly longer than a Redshank's; bill dark, slightly upcurved; call note on rising "tu-tu" or "teuk-teuk," similar in pitch to a Redshank's, but much softer in tone.

When first seen by Capt. Shewell it was near a Redshank, and he at once noticed the yellow, not orange legs, greyer upper-parts and slenderer build. The same characteristics were noted by the other observers. Among a flock of Redshanks the Yellowshank could be picked out at once even at a distance, without field-glasses and in a dull light, by its slimmer appearance and greyer upper-parts: it seemed altogether more graceful than and not so restless as a Redshank. It was sometimes chased by Redshanks. It usually kept to a small and clearly defined territory: it was quite tame and allowed observers to approach within fifteen yards. On very close approach it bobbed like a Redshank. A. V. C. CORNISH, H. J. CRASKE, B. J. B. O' DOGHERTY, E. W. HENDY AND H. S. JOYCE.

EARLY NESTING.—A few records of early breeding for the spring of 1946, and others, additional to those already published (*an.tea*, Vol. xxxix, pp. 62-63), for 1945 have been received. Also two records for 1943 of the Common Buzzard (*Buteo b. buteo*) in Devon, both of which are particularly early. Almost without exception early breeding records are from the south of England and Wales.

The following are the most noteworthy of the resident species:—

MAGPIE (*Pica p. pica*).—1945. Seen building at one nest on February 28th, and others in the first days of March; Monmouthshire. (Bruce Campbell).

HAWFINCH (*Coccothraustes c. coccothraustes*).—1945. Two very early nests reported from within a five mile radius of Gravesend, Kent. The first found with an incomplete clutch of two eggs (later completed to four) on April 13th; the second with six eggs on April 19th, and incubation estimated at from three to four days. (W. J. Irwin).

GOLDFINCH (*Carduelis c. britannica*).—1945. One nest being built on April 17th, near Gravesend, contained a completed clutch of five eggs on April 25th. (W. J. Irwin).

BULLFINCH (*Pyrrhula p. nesa*).—Two records for 1945. The first egg in a nest at South Croydon, Surrey, was laid on April 21st. (J. A. Culpin). Two young in a Herefordshire nest were ringed on May 16th when "on the point of flying"; the indications are therefore that incubation began not later than April 24th, and probably a few days earlier. (Rev. John Lees).

CIRL BUNTING (*Emberiza c. cirlus*).—1946. A nest at Farley, Wilts., was being built, mostly by the cock bird, on April 28th. (W. M. Congreve).

PIED WAGTAIL (*Motacilla alba yarrellii*).—1945. One record for a clutch of five eggs completed on April 12th, near Gravesend. (W. J. Irwin).

TREE-CREEPER (*Certhia familiaris britannica*).—1945. Seen building on April 19th at Dibden, Hants.; but this nest was unfortunately destroyed with the eggs at some time previous to April 21st. (Ralph E. Williams).

NUTHATCH (*Sitta europaea affinis*).—1945. A nest near Gravesend contained a completed clutch of eight eggs on April 19th. (W. J. Irwin). In 1946 another nest near Hazelhurst, Hants., contained two eggs on April 19th. (W. M. Congreve).

ROBIN (*Erithacus rubecula melophilus*).—1946. A nest found near Ipswich on February 23rd, contained four eggs. (T. R. Oliver).

GREAT SPOTTED WOODPECKER (*Dryobates major anglicus*).—1945. Clutch of six eggs completed on April 28th near Gravesend. (W. J. Irwin).

COMMON BUZZARD (*Buteo b. buteo*).—Two records from Devon for 1943. The first nest at Culm Davy Hill, on the Devon and Somerset border, contained young at least ten days old on May 15th; estimated that first egg laid on approximately April 7th. The second nest near Trentishoe, north Devon, contained three eggs on April 18th. (Richard Gordon).

Of the summer migrants, the following may be noted:—

WILLOW-WARBLER (*Phylloscopus t. trochilus*).—Once again there appear several early records for this species. 1945. A nest in Monmouthshire contained two eggs on April 25th (Bruce Campbell), and another at Colbury, near Southampton, had three eggs on April 29th (Ralph E. Williams). In 1946, a nest near Monk Okehampton, Devon, was completed on April 25th, and the first egg laid on April 27th; the full clutch of seven eggs was being incubated on May 4th. (Richard Gordon.).

REED-WARBLER (*Acrocephalus s. streperus*).—1946. Clutch of four eggs in the Chichester district, May 16th. (G. H. Vick).

WHITETHROAT (*Sylvia c. communis*).—1945. Nest containing three young and two eggs on May 9th in Monmouthshire. (Bruce Campbell).

REDSTART (*Phoenicurus ph. phoenicurus*).—Two records for 1945 from South Wales. A Glamorgan nest with eight eggs on May 8th and a Breconshire nest with seven young about nine days old on May 28th; in the latter, incubation may be estimated to have begun on approximately May 6th. (Bruce Campbell).

SWALLOW (*Hirundo r. rustica*).—1946. Nest found at Monnington-on-Wye, Herefordshire, on May 28th, containing young 15-16 days old, so that incubation must have started before end of April. (I. J. Ferguson Lces).

TURTLE-DOVE (*Streptopelia t. turtur*).—1945. One nest found containing two eggs on May 7th in Monmouthshire. (Bruce Campbell).

COURTSHIP OF ROOK.—Mr. R. B. Codd sends a note of a pair of Rooks (*Corvus f. frugilegus*) seen displaying on March 29th, 1946, at Kingsdown near Deal, the male holding a white feather in his bill while coition took place and afterwards dropping it.

SEXUAL BEHAVIOUR OF MAGPIES IN ASSEMBLY.—Mr. F. J. Goddard reports an assembly of six Magpies (*Pica p. pica*) seen near Southampton, on January 19th, 1946, in which he saw one male mount a female and attempt coition; another male attempted it and was driven off by the female.

GAIT OF CORN-BUNTING.—Referring to the notes on this subject (*antea*, pp. 53, 191) Mr. H. E. Woods informs us that when watching several Corn-Buntings (*Emberiza c. calandra*) drinking from a puddle on a gravel path at Portsdown Hill, Hants, he was struck with the speed with which they ran from one side of the puddle to the other, sometimes chasing one another away.

LATE FIELDFARES IN LINCOLNSHIRE.—Mr. Arthur Welch sends us particulars of three Fieldfares (*Turdus pilaris*) which he clearly identified near Cadney-cum-Howsham, Lincolnshire, on May 26th, 1946.

OSPREY IN YORKSHIRE.—Messrs M. D. and R. Cobham send us particulars of an Osprey (*Pandion h. halicætus*) of which they had good views at Castle Howard Lake, Yorkshire, on April 26th, 1946.

MALLARD SHARING NEST.—Mr. S. Frank reports that on April 5th, 1946, he flushed two duck Mallard (*Anas p. platyrhyncha*) from a thicket at the edge of a pond near Malmesbury, Wilts, and on investigation found a Mallard's nest containing twenty eggs. The nest came to grief soon afterwards, so that further observation was not possible.

GANNET IN WARWICKSHIRE IN JUNE.—Mr. G. Sutcliffe sends us particulars which have already appeared in the *Stratford-upon-Avon Herald*, of an adult Gannet (*Sula bassana*) which was found in a field at Atherstone on May 30th, 1946. The bird appeared to be uninjured, but died a few days later, after having been released and re-captured in the vicinity. Accidental inland occurrences of this sort are unexpected in the breeding-season.

BEHAVIOUR OF AVOCET.—Mr. D. D. Harber sends us a note of an Avocet (*Recurvirostra avosetta*) which he saw by the Cuckmere, Sussex, on May 8th, 1946, jumping up and down on the mud in the same way as Redshank and some other waders sometimes do with the apparent object of drawing up worms. This habit is not mentioned in *The Handbook*.

BLACK-HEADED GULLS "UP-ENDING."—Mr. J. Taylor writes that on November 19th, 1945, he watched a flock of 52 Black-headed Gulls (*Larus r. ridibundus*) bathing on the mill pool in Warford, Cheshire, when four or six of them kept repeatedly "up-ending" in the manner of a surface-feeding duck, a habit not recorded in *The Handbook*. As the pool was rather low at the time the birds were probably feeding from the bottom or close to it.

PHEASANT'S NEST WITH THIRTY-ONE EGGS.—Mr. E. Wilford sends us particulars of a Pheasant's (*Phasianus colchicus*) nest which he found on May 10th, 1946, at Ware, Herts., containing thirty eggs. On the following day it contained thirty-one, but it was soon afterwards robbed and no more eggs were laid. Such a large number of eggs must be due almost certainly to two, and more probably to three, hens laying together. The largest number in one nest recorded in *The Handbook* is twenty-two.

REVIEWS.

Birds in Colour. By Walter Higham. (Collins, 1945). Price 25s.

THIS book comes as something of a shock to those who are acquainted with the excellence of the colour rendering in Mr. Higham's cinematograph films. The gap between colour transparencies and reproductions on paper is still great in spite of the extravagant claims made by publishers. One can state at once that if any ornithologist entertains the idea of using colour photograph reproductions for illustrating precisely colour values in such biological problems as are concerned with them, he will at the moment be doomed to disappointment. As an example, the reviewer turned to the photograph of a Tawny Owl to discover whether it depicted a bird in the brown or in the rufous phase. It is quite impossible to tell.

However, on more general grounds than this the colour plates still fail to achieve a standard that one might reasonably require. Blues usually appear far too vivid (the Kingfisher pictures are quite painful to regard) and greens are exceptionally tricky, often erring on the yellow side and turning brownish very abruptly as they pale. It is also noticeable how the intensity of the light affects the colours: this is seen in the two photographs of the Robin on the same plate and in the four pictures of Merlins. In the latter case the difference in colour between the male and female is almost too arresting: only when one remarks that in the latter the foreground as well as the bird is redder, can allowance be made for the range of error in the technique.

Most of these criticisms can hardly be levelled at the author. No doubt it is the hope of the publishers to sell the book mainly by its illustrations, and a large public is usually attracted by a new venture, even if it has not yet mastered its medium.

However this may be, one may hope that some buyers at least will be attracted by the frank and simple writing and refreshing enthusiasm of the author as he tells about his first interest in birds and the development of his passion for observing and photographing them. The latter part of the text contains a list of the commoner species of British Birds with condensed descriptions of plumage and habits arranged under headings. This telescoped version of *The Handbook* may be useful to people who wish to avoid the complexity of the original work.

H. N. SOUTHERN.

A Guide to Bird-Watching. By Joseph J. Hickey. (Oxford University Press). Price 16s.

THIS is without doubt one of the very best and most original books—in many ways certainly the best—which have appeared on the subject of bird-watching. Being written for American observers it is naturally primarily concerned with American birds and American conditions, but since the basic methods of ornithological field-work are the same everywhere it can be read with profit and pleasure by any observer of birds on this side of the Atlantic. Even the points of difference between conditions here and in the United States are often instructive. For example, the extraordinary passage of birds-of-prey to be observed in certain parts of the States, to which we in this country have nothing really parallel, emphasizes one of the differences as regards migration phenomena between a group of islands situated, as ours are, as outliers of a Continent and a great continental land mass like North America with vast territories in high latitudes.

The book is written in a pleasantly informal style, which successfully avoids the pitfall of cheap "chattiness," and the author constantly illustrates his points by anecdotes and descriptions of the experiences of field observers. Accounts of different types of field study are illustrated by tables freely interspersed in the text, based on the actual observations of the author and the published results of many other workers. Though the sources of information in these tables are duly recorded, references to observations quoted in the text are deliberately excluded for reasons which the author gives in his preface. Nevertheless we think an appendix giving such references would be welcome to many.

The opening chapters on identification, equipment, note-taking and so forth are mainly for beginners. The others, to quote the author's own words, "deal with bird study in progressively increasing detail and with a continuous development of ideas." Migration and homing experiments, ecological and distributional studies, census work, life-history and other studies on particular species are all covered, and an appendix gives a remarkably comprehensive list of questions meriting attention in life-history studies, which should be very suggestive and helpful to less experienced observers. Other useful appendices provide an annotated list of bird books dealing with field subjects and a list of bird clubs in Canada and the U.S.A. An original feature is a section on bird tracks.

We have very few specific criticisms of this excellent book. It might, however, be noted that the implication that "abmigrating" ducks are always males (p. 34) is mistaken, and the statement that the experiments of Lack and Lockley (of whom only the latter is mentioned) on the homing of Manx Shearwaters transported to the Continent *proved* that the birds "could return to their Welsh island *on a straight line*" (italics ours) is hardly a sound presentation of the case, though the results of the releases in Switzerland may fairly be said to favour this conclusion.

If we have a more general criticism it is that as regards certain fields of enquiry the author seems at times almost *over-optimistic* as to what can be achieved by comparatively untrained amateur observers, with or without the general direction of bird clubs and similar bodies, great though the possibilities undoubtedly are. Experience in this country in recent years has shown both the potentialities and the weaknesses of such work. But few things could be more effective than Mr. Hickey's book itself in assisting such amateurs to graduate from the level of untrained and rather superficial observation to something more original and constructive. It is eminently practical in its treatment and few bird-watchers in any country could read it without being made aware of new problems and new angles of approach to old ones or without benefiting from its suggestions and advice. It deserves the widest circulation amongst field ornithologists, not only in America but outside.

How to Study Birds. By Stuart Smith. (Collins, 1945). Price 8s. 6d. net.

DR. STUART Smith's book deals broadly speaking with much the same subject as Mr. Hickey's, but the approach is quite different, and it is in some ways interesting to compare the two. While the American book is expressly a practical "guide to bird-watching," Dr. Smith's method is to give the reader a general picture of the results of modern biological studies of birds, and so to arouse interest in profitable lines of enquiry rather than to provide detailed guidance as to methods. The result is a stimulating and interesting book, which we can commend to amateur bird watchers, though it also lays itself open to some criticism in certain respects.

The need to avoid overburdening a popular text with bibliographical references is met by the method adopted by Lack in *The Life of the Robin* of giving in an appendix references under page numbers to the papers or other publications on which statements are based. Even names are avoided in the text, and indeed the treatment is so resolutely impersonal that even the experimental study of the stimulus to migration is mentioned without Rowan and territory without Howard, who figures merely as "one famous ornithologist," while Mrs. Nice, in connexion with her famous Song-Sparrow studies, is only permitted a similarly anonymous appearance as "an American worker." We feel this is applying a sound general principle too rigidly and that some reference by name to well-known workers associated with progress in particular fields enhances the vitality and general appeal of a popular account of scientific data; but this is no doubt to some extent a matter of individual taste.

As regards the actual presentation, the course adopted in Part I is to take the reader through a bird's year, discussing migration, territory, courtship, nesting, the rearing of young, winter behaviour and so on in the light of modern biological knowledge and concepts. The second part deals with a few selected

topics, beginning with bird vision and flight, followed by very brief chapters on population problems, equipment, and the bird mind. The two chapters on vision are an interesting and welcome presentation of facts not easily accessible to ornithologists in non-technical form, and this last point no doubt provides the main reason and justification for treating the subject so much more fully than some others.

It would certainly be rather easy to criticize the balance between the relative amount of space devoted to some of the subjects, but in a small book of under 200 pages the treatment is bound to be rather highly selective, and a good deal must necessarily depend on the writer's special interests. But from a slightly different angle it might be said that, at least in the first section, the author has if anything tried to cover almost too much and has not invariably mastered the diverse aspects of his subject as completely as is desirable for a fully satisfactory presentation even at the popular level. We note a certain tendency to devote too much attention to relatively recent papers and communications in the most accessible journals or published works, although these are not always the most important available on the subject concerned, and the book is also not entirely free from mis-statements and inaccuracies which a more careful checking should have eliminated. In the latter category are the use of "oviduct" for "ovary" on p. 66, of "interocular" for "intra-ocular" on p. 141, of "radii" for "rami" on pp. 145 and 146, and the mis-spelling of several names in the references.

It is perhaps unfortunate that the opening chapter, dealing largely with the complex and difficult subject of migration, is one of the less successful, and it displays rather conspicuously the defects just mentioned. The account of Southern's studies on the northward migration of the Willow-Warbler and other species in spring reads as though the figures arrived at represented the average rate of travel of individual birds, whereas the original papers make clear that what is being studied is the *rate of spread of the species*, by no means the same thing. Rowan's suggestion that the more advanced development of the gonads of Starlings from London roosts as compared with birds from roosts in the country is due to the effect of disturbance by traffic is quoted without regard to the fact that the work of Bullough leaves very little doubt that the real explanation is that the London birds are mainly British residents and those using the large rural roosts mainly immigrants from the Continent, in which the inherent rhythm of sexual development is behind that of British birds. Observations on migration in the African desert during the recent war no doubt amplified previous findings in a welcome manner, but the general fact of such migration was clearly established by Moreau (*Ibis*, 1927, p. 443) years before.

There are some other statements here and there with which we must disagree. For instance the positive (and even italicized) assertion that a bird which has gone through an "injury-feigning" display will never return and repeat the performance, although it has published authority, is simply not true for a number of species.

Nevertheless, the fact that the book cannot altogether escape some necessary criticism should not affect its recognition as in general a sound and interesting presentation of a wide range of biological facts and conclusions about birds in readable and straightforward language for amateur observers. It should certainly achieve its avowed object of bringing home to such readers that field ornithology is something much more than the uncritical pursuit of rarities, and it deserves a second edition, in which it should not be difficult to rectify the main weaknesses of the first.

Modern Bird Study. By Ludlow Griscom. (Harvard University Press, 1945. London: Oxford University Press). Price 14s.

THE author of *Modern Bird Study* is a distinguished authority on bird systematics and distribution, who is also one of the most expert field ornithologists in the United States. The present work, however, is not primarily a field book, and indeed the precise audience for whom it is intended is not so

obvious as in the two just noticed. The chapters on distribution and classification assume, as the author states in his preface, some previous knowledge of birds and of North American birds in particular, but the earlier ones, which, it is stated, "will appeal to any layman with a genuine interest in birds" are evidently directed more to this class of reader than to ornithologists, though it is not to be supposed that the latter will not find much of considerable interest in them.

In the preface reasons are given for omitting "anatomy, physiology, the contributions of bird banding, life-history studies, modern experimental work in behaviour and homing instincts, and other equally important phases of ornithology," and in this the author is quite within his rights, some selection of topics being, indeed, quite necessary; but at least one American reviewer has criticized the title of the book on the ground that the subjects excluded comprise fields in which some of the most important modern advances have been made. The criticism is one with which we cannot but agree, but we need not take the title too seriously; it is less important than the contents.

Turning to the latter, it must be said that, apart from a certain unevenness of treatment already noted, the several chapters are not all of equal merit. Those on migration provide an instructive short presentation of the subject, which, because of the rather different emphasis on some aspects, such as migration in the tropics and—naturally—in North America, may be commended to British readers as giving in some ways a picture from a rather different angle from that to which they are generally accustomed. Incidentally, we note with interest that the migratory behaviour of the American Golden Plover, so often quoted as the classical example of alternative routes in spring and autumn, has undergone some modification in recent years.

The chapter on "Capacity and intelligence in birds" is much less successful, and it cannot in honesty be said to be a very satisfactory presentation of "modern bird study" in this field. The most valuable section is that on geographical distribution, in which the author is dealing with one of his own chosen fields of research. This is most informative and provides information not readily available in any other non-specialist work on birds. The chapter on classification and the species also affords at least an introduction to some modern concepts of which most ornithologists are insufficiently, if at all, aware. But we must record a protest against the description of the cross between the Blue-winged and Golden-winged Warblers as showing inheritance "of the type popularly called Mendelian," as though inheritance in general were not "Mendelian" too!

LETTER.

ASSOCIATION OF THREE ROOKS AT NEST.

To the Editors of BRITISH BIRDS.

SIRS.—I have observed no less than twenty-three instances between February 27th and March 7th, 1946, where one Rook (*Corvus f. frugilegus*) was either in or standing upon the nest with two attendant Rooks perched close together at some twelve to eighteen inches from the occupied nest, and remaining thus for periods of from ten to thirty minutes, even longer.

This behaviour seems to be at variance with the usual attitude adopted by one of a pair at the nest at this stage of the mating season, because the approach of a third bird to within four or five feet of the chosen nest is normally not tolerated, and the offender driven off. Also it appears to depart from the "three-bird mating flights" recorded under the heading "Display and Posturing" in *The Handbook*.

In every instance this behaviour was observed in small rookeries situate within a fifteen mile radius of Oxford, and offered no confusion with those pairs occupying adjacent nests, such nests being, in many instances, at a considerable distance from the one under observation.

It is only this season that I have taken notice of such behaviour and think it sufficiently interesting to report upon it. BERTRAM M. A. CHAPPELL.

NOTICE TO CONTRIBUTORS.

Contributors are asked to observe the following points, attention to which saves the waste of much editorial time on trivial alterations.

MSS. if not typed should be clearly written. Authors of papers, especially those containing systematic lists, lists of references, tables, etc., should consult previous papers on similar lines in *British Birds* as a guide to general presentation and set-out, including use of particular type, stops, and other conventions, such as date following the month (January 1st, etc., not 1st January), names of books and journals in italics, not inverted commas, and so on. Capital initial letters are to be used for proper names of definite species, but not for names used in a general sense or covering more than one species : thus "Great Tit," but "flocks of tits." [In systematic lists the whole name should be in capitals.] The scientific name (underlined in MS. to indicate italics) follows the English name in brackets without any intervening stop. Scientific nomenclature follows *The Handbook of British Birds* or H. F. Witherby's *Check-List of British Birds* based on this. When the subspecific name (if this is used) repeats the specific name the initial letter only should be used for the latter; otherwise the whole name should be given in full : thus "*Parus m. major*," but "*Parus major newtoni*."

Notes should be drawn up in as nearly as possible the exact form in which they will be printed, with signature in BLOCK CAPITALS. Though suitable headings and scientific names can be added by the Editor, if necessary, they should be inserted by authors as far as possible. Communications should always be as concise as possible, though reasonable detail can be given where this is important. Notes or records of subsidiary importance may be abbreviated or otherwise modified by the Editor for inclusion in the section of "Short Notes." Maps or graphs must be neatly and boldly drawn in Indian ink, with due allowance for reduction when necessary.

Notes and papers for publication and other communications of strictly editorial nature can be addressed direct to B. W. Tucker, 9, Marston Ferry Road, Oxford. Enquiries or requests for information not immediately related to material for publication must be accompanied by a stamped and addressed envelope.

Short notes accepted for publication without material alteration are not acknowledged by post except by special request, but proofs are submitted to the writers in due course. Authors of papers receive 20 separate copies free of charge. Any additional separates required must be ordered when returning the proofs and be paid for by the author.

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BERNARD W. TUCKER, M.A., F.Z.S., M.B.O.U.

ASSISTED BY

NORMAN F. TICEHURST, O.B.E., M.A., F.R.C.S., M.B.O.U.

AND A. W. BOYD, M.C., M.A., F.Z.S., M.B.O.U.

CONTENTS OF NUMBER 12, VOL. XXXIX, DECEMBER 2ND, 1946.

PAGE

Singing of Birds on Malta and Gozo. By John Gibb	354
.The Clutch-size of the Yellowhammer. By R. Parkhurst and David Lack	358
Recovery of Marked Birds. Communicated by E. P. Leach ...	365
Notes on the Food of some British Birds. By James W. Campbell	371
Notes :—	
Large clutch of Magpie's eggs (H. E. Woods)	374
"Anting" of Starling (Leslie Gregory)	374
Rhythmnical calling of Chaffinches on migration (P. J. Conder)	374
Young birds returning to nest (J. B. Watson)	374
Display flight of Willow-Warbler (John Southern)	375
Blackbird's clutch of two eggs (Lt.-Col. B. H. Ryves) ...	375
Varieties of British Robin (Bruce Campbell)	375
Display of Hedge-Sparrow (D. J. May)	376
The racial status of Hedge-Sparrows from Northumberland (P. A. Clancey)	376
Male Kestrel passing prey to female in the air (Walter Griffith)	376
"Injury-feigning" of Tufted Duck. (D. J. May)	377
Food-washing habits of waders (C. F. Tebbutt, A. H. V. Smith, Robert Morris, R. G. Adams, John C. S. Ellis, J. S. Watson)	377
Movements of Bar-tailed Godwits on Morecambe Bay (J. A. G. Barnes)	379
Kittiwake nesting in Norfolk (B. B. Rivière)	379
Short Note :—	
Early nesting—correction.	379
Reviews :—	
<i>Birmingham and District Bird Club : Twelfth Annual Report on the Birds of Warwickshire, Worcestershire and South Staffordshire, 1945</i>	379
<i>Report of the Cambridge Bird Club, 1945</i>	380
<i>Cornwall Bird Watching and Preservation Society : Fifteenth Annual Report, 1945</i>	381
<i>Eighteenth Annual Report of the Devon Bird Watching and Preservation Society, 1945</i>	381
<i>Report on Dorset Birds, 1944</i>	382
<i>Report on Birds observed in Hertfordshire in 1945</i>	383
<i>Leicestershire and Rutland County Report of Wild Birds for 1945</i>	383
<i>The London Bird Report for 1945</i>	383
Letters :—	
Crested Tits (P. A. Clancey)	384
The Birds of Kent (James M. Harrison)	384

SINGING OF BIRDS ON MALTA AND GOZO

BY

JOHN GIBB.

THE following notes on the singing and calling of birds, mostly of species on the British List, were made on Malta and Gozo between September, 1941, and July 1945. They do not pretend to be comprehensive on the subject of bird song on these islands, but they may add something to available information on the singing and calling of birds in winter quarters or on passage, a subject for the study of which an island such as Malta is particularly adapted, because all individuals of nearly all the species are definitely migrants. Where my own interpretation of a song or call has differed from that in *The Handbook* only in its verbal representation, then for the sake of simplicity I have used *The Handbook* version. But where in my opinion my own interpretation more accurately describes what I have heard I have allowed this to stand.

GREENFINCH (*Chloris chloris* ? *aurantiiventris*).—Winter visitor. The spring and summer call of the male “tswcee,” heard regularly from mid-February till departure of birds in mid-March.

LINNET (*Carduelis cannabina* ? *mediterranea*).—Winter visitor; a few breed in the neighbouring island of Gozo. In good song February and March before the vast majority of birds depart.

SERIN (*Serinus canarius serinus*).—Winter visitor. Sings persistently all winter.

CHAFFINCH (*Fringilla c. caelebs*).—Winter visitor. Song complete with terminal flourish recorded once, March 8th, 1945.

CORN-BUNTING (*Emberiza calandra*).—Resident, breeds. Song period as in British Isles except that song is much reduced in July and early August.

SHORT-TOED LARK (*Calandrella b. brachydactyla*).—Summer visitor, breeds.

1. Ordinary flight call heard at all times.

2. Normal song is sustained from arrival at the end of March until end of June; becomes less frequent throughout July and was only once recorded in August.

3. Plaintive whistling “see-eer.” Very distinctive. Seldom heard on arrival until mid-April. Becomes very frequent in late April and continues until the end of July and first week of August. Throughout July it is more commonly heard than the normal song.

4. A musical trill down the scale of 2-3 seconds duration, uttered from the ground or some slight eminence. Quite different from the normal song and perhaps best written “tee-tee-ti-ti-te-te-too-too-too.” Heard early May until end of June regularly; in July occasionally; not recorded for August and once September 19th.

TREE-PIPET (*Anthus t. trivialis*).—Passage-migrant. Not heard in song. The Maltese name *Tizz* describes the note.

MEADOW-PIPET (*Anthus pratensis*).—Winter visitor. Not heard in song. Maltese name *Pespus* is again descriptive of the note.

BLACK-HEADED WAGTAIL (*Motacilla flava feldegg*).—Passage-migrant. No song. Note “shrreep,” harsher and less sibilant than the “tsweep” of the Blue- or Ashy-headed Wagtails. It most closely approximates to the “chizz-shrip” note of the White Wagtail, but is distinguishable from it by being monosyllabic.

WHITE WAGTAIL (*Motacilla a. alba*).—Winter visitor and passage migrant. No song. Notes, 1, the usual “tschizzik,” and 2, the less common “chizz-shrip.”

WOODCHAT SHRIKE (*Lanius s. senator*).—Passage-migrant and summer visitor. I likened the song to that of a subdued Starling and lacking the cheery laughing bubbles of that bird.

COLLARED FLYCATCHER (*Muscicapa albicollis*).—Notes, 1, a sharp hard “tzit” together with a nervous flick of the wings, and 2, a plaintive whistle “pweeeet.”

CHIFFCHAFF (*Phylloscopus c. collybita*).—Passage-migrant and winter visitor. Sings from mid-January onwards.

WILLOW-WARBLER (*Phylloscopus t. trochilus*).—Passage-migrant. Sings regularly in April.

MOUSTACHED WARBLER (*Lusciniola m. melanopogon*).—One only seen, March 24th, 1944. In fine song from a low fig tree bordering a field of deep scylla. I recorded it as being sweeter and not so loud as a Sedge-Warbler; it was delivered jerkily with a slight pause between each phrase.

ICTERINE WARBLER (*Hippolais icterina*).—Passage-migrant. Sings frequently, but not well.

MELODIOUS WARBLER (*Hippolais polyglotta*).—Passage-migrant. I was only once able to identify this species from the Icterine when I heard the characteristic sparrow-like chatter, a soft “chi-chi-chi-chi-chi . . .” with the mandibles slightly parted and vibrating.

GARDEN-WARBLER (*Sylvia borin*).—Passage-migrant. Once recorded in a subdued song, April 7th, 1944.

WHITETHROAT (*Sylvia c. communis*).—Passage-migrant. Sings occasionally end of April and beginning of May.

LESSER WHITETHROAT (*Sylvia c. curruca*).—Passage-migrant. Song recorded March 28th, 1942.

SARDINIAN WARBLER (*Sylvia m. melanocephala*).—Resident, breeds. In full song February to June inclusive. Sings occasionally rest of the year with a possible small gap at end of November to early December. In addition to the song and the usual strident notes there is also a soft “kuick”; often repeated two or three times at intervals of a few seconds and sometimes immediately prior to the full song.

SUBALPINE WARBLER (*Sylvia c. cantillans*).—Passage-migrant; one or two pairs may remain to breed. Sings regularly and well on arrival at the end of March and in April. A song of contentment rather than ecstasy, entirely lacking the raucous cries of the Sardinian, from which it is easily distinguished.

DARTFORD-WARBLER (*Sylvia undata* ? subspecies).—Irregular winter visitor. One male recorded in slight song, January 16th, 1944.

SONG-THRUSH (*Turdus ericetorum philomelus*).—Winter visitor. Song once heard, March 4th, 1943.

BLUE ROCK-THRUSH (*Monticola cyanus*).—Common sedentary resident. I have noticed three distinct alarm or anxiety notes. A harsh churring; a very high-pitched and plaintive “peep,” corresponding to the “tsee” of the Blackbird (*Turdus m. merula*); and an abrupt hard “tchuk”, accompanied with a nervous bobbing, tail flicked open and wings drooped, used less frequently than the corresponding note of the Blackbird.

Song begins towards the end of January and is maintained until mid-May. In September, October and November it sings again but without the fervour of spring.

The loud and pure fluting notes much resemble those of the Blackbird, though the phrases of the song are shorter; the fine song takes on a beautifully haunting quality as it re-echoes along the steep rocky valleys and cliffs. The male delivers the song from a few well-used and prominent perches, or else in flight. In the latter case it may either be the display flight, confined to spring, when the bird flies with slow beating wings or glides with widely fanned tail, and the song becomes slower and more deliberate, but equally beautiful; or it may be in ordinary flight in spring and autumn.

WHINCHAT (*Saxicola rubetra*).—Passage-migrant. Full song recorded once, May 15th, 1945.

STONECHAT (*Saxicola torquata rubicola*).—Winter visitor. Two instances of slight autumn song, November 1st, 1943 and November 3rd, 1944. Full song heard February 7th, 1945.

BLACK REDSTART (*Phoenicurus ochruros gibraltariensis*).—Winter visitor. I listened to one singing for several minutes on March 7th, 1942. The song consisted of a single phrase of thin sweet notes often though not invariably followed by a short metallic chatter, “tsi-tsi-tsi-tsi.” The bird repeated this little combination many times in quick succession.

NIGHTINGALE (*Luscinia m. megarhyncha*).—Passage-migrant. Sings regularly and well on spring passage.

ROBIN (*Erithacus r. rubecula*).—Winter visitor. Sings hard on arrival in October; song decreases throughout December and January, rising slightly in intensity in February.

SWALLOW (*Hirundo r. rustica*).—Passage-migrant. Sings regularly on spring passage.

NIGHTJAR (*Caprimulgus e. europaeus*).—Passage-migrant. Churring song heard at night once for two or three minutes, May 9th, 1942.

HOPOE (*Upupa e. epops*).—Passage-migrant. I heard the “hoop” several times on one occasion when three birds were playing together, March 28th, 1942. The Maltese name of *Dakkuka* describes this note.

WRYNECK (*Jynx torquilla* ? subspecies).—Passage-migrant. Calls regularly on spring passage, often with reduced volume. Autumn sub-song twice recorded, December 1st, 1942 and November 21st, 1944.

CUCKOO (*Cuculus c. canorus*).—Passage-migrant. Heard calling April 15th, 1942.

MEDITERRANEAN SHEARWATER (*Puffinus k. kuhlii*).—Resident, breeds. I visited a breeding station on Gozo, June 2nd, 1945. The birds were milling round the breeding cliffs and calling continuously an almost indescribably weird cry which I attempted to translate as "eeeerweh-oooorweh, wer-huh"; this was the basis cry, the first two words distinctly separate and the final grunts often omitted. But there was infinite variation on this theme; no two birds were quite alike. The variation in pitch from bird to bird was extraordinary: some were like the deep guttural grunting of a pig, others shrill and wheezy like a baby crying. I came to recognise a few of the more outstanding individuals by their own peculiar call from one particular spot on the cliff. This commonest note was given both in flight and from the ground. I also heard a deep purring and a cat-like squeal unrelated to the usual note and I think only used from the ground.

QUAIL (*Coturnix c. coturnix*).—Passage-migrant and resident; breeds. The triple call is first heard from wintering birds in early February; it continues through to July, becomes less frequent in August and I recorded it twice only in September. I heard it once by night at 0200 hours in a full moon on August 19th, 1943.

THE CLUTCH-SIZE OF THE YELLOWHAMMER

BY

R. PARKHURST AND DAVID LACK.

INTRODUCTION.

IN 1944 one of us (R.P.) undertook an intensive study of the nesting of the Yellowhammer (*Emberiza citrinella*) near Oxford. In conversation, it was found that this confirmed the seasonal variations in clutch-size found for the Robin (*Erithacus rubecula*) by the other (Lack, 1946). R.P. then prepared a summary of his observations, but could not revise this for the press owing to absence abroad. His account was therefore edited by D.L., but is the result of field-work solely by R.P. D.L. then wrote to various other observers for clutch records, and these are analysed in Part II of this Paper.

PART I.

BY R. PARKHURST.

Between May 16th and August 24th 1944, but omitting May 30th to June 14th, an attempt was made to find as many nests of the Yellowhammer as possible in a triangular area of lanes, fields and hedgerows a few miles north of Oxford, bounded by the villages of Woodstock, Tackley and Kidlington. Search was maintained at equal intensity throughout the period, so that the number of nests found reflects the amount of breeding which occurred.

Nests were found by flushing the sitting bird, by watching building, by searching likely places, or by watching the hen back from feeding. Nests were inspected as carefully as possible, without disturbance of the vegetation, and the eggs were not handled except to estimate the state of incubation. Nests found with the clutch incomplete were revisited when complete, and nearly all the nests were visited again about the time the young hatched, to get survival data.

TABLE I. HEIGHT OF NEST ABOVE GROUND.

Ht. in feet.	No. of Nests
on ground	18
0 - 1'	51
1' - 2'	44
2' - 3'	28
3' - 4'	7
over 4'	1

There is a tendency for later nests to be higher above the ground than earlier ones, the average height for nests found May 16-July 6 being 1' 3", and for nests found July 7-August 24 being 1' 9".

TABLE II. SITUATION OF GROUND NESTS.

Base of hawthorn shrub	7	
Bank side	...	3
Grass at roadside	...	2
In other vegetation	...	6

NOTE.—The last category includes base of small sloe, St. John's wort, thistles, nettles, brambles and cut grass.

TABLE III. SITUATION OF NESTS ABOVE THE GROUND.

Sloe bush or hedge	...	38
Hawthorn bush or hedge		37
Bramble	...	33
Hawthorn and bramble	...	5
Maple	...	5
Bindweed and nettles	...	4
Elm shoots	...	4
Clematis	...	2
Elder	...	2
Haystack	...	1

TABLE IV. BREEDING SEASON.

Period	No. of Nests with fresh eggs.
Before May 16	?
May 16—29	37?
May 30—June 14	?
June 15—28	27
June 29—July 12	24
July 13—26	32
July 27—August 9	24
August 10—24	3

NOTES.—(i) The state of incubation was estimated as nearly as possible and allowed for, so that nests found in an advanced state of incubation were included in the total for the previous week.

(ii) Observations were not started until May 16, and the observer was away from May 30 to June 14. As a result, the nest total for the period May 16-29 is not quite correct. It represents all nests found during this period, irrespective of the state of incubation. Seven nests found May 16-22 were in an advanced state of incubation, so should have been included in the preceding week, to set against which no nests in an advanced state of incubation were found May 30-June 6, as the observer was away.

TABLE V. AVERAGE CLUTCH-SIZE.

(i) In nests found with fresh eggs.

Period.	No. of nests containing					Total.	Average Clutch.	
	c/1	c/2	c/3	c/4	c/5			
May 16—29	—	—	10	12	—	22	3.5
June 15—28	...	—	—	2	10	1	13	3.9
June 29—July 12	...	—	—	5	9	—	14	3.6
July 13—26	1	2	9	8	—	20	3.2
July 27—Aug. 9	...	1*	1	8	—	—	10	2.7
Aug. 10—24	...	—	—	2	—	—	2	(3.0)
(ii) In all nests found.								
May 16—29	...	—	1	18	13	1	33	3.4
June 15—28	...	—	—	9	16	1	26	3.7
June 29—July 12	...	—	1	8	13	—	22	3.5
July 13—26	...	1	4	15	11	—	31	3.2
July 27—Aug. 24	...	1	5	19	—	—	25	2.7

The chief interest of Table IV is to show that nesting is still common up to August 9, but thereafter declines rapidly.

The data in Table V show that the average clutch of the Yellowhammer was rather smaller in the second half of May than in the second half of June, while during July and August it declined steadily. Hence the average clutch-size shows variations rather similar to those found by Lack (1946) for the Robin, with an increase early in the season and a decrease late in the season. However, the seasonal decrease occurred in early June in the Robin, but not, apparently, till late June in the Yellowhammer.

The average clutch-size appears to be slightly higher in those nests found with fresh eggs than in all nests found. This suggests that in a few of the nests found in an advanced state of incubation, one egg had been removed by a predator before the nest was found.

TABLE VI. HATCHING SUCCESS.

Period.	Number of nests which were:				No. of eggs in completed clutches	% hatched
	destroyed before complete	failed after complete	partly successful	completely successful		
May 16—29	4	9	3	3	53	32%
June 15—28	3	5	1	7	51	61%
June 29—						
July 12	1	3	7	4	51	59%
July 13—26	2	3	7	8	59	69%
July 27—						
Aug. 24	3	2	2	6	30	73%
TOTAL	13	22	20	28	244	58%

Out of 70 nests with completed clutches, 40% were completely successful.
 29% .. partly ..
 31% .. failures.

Of 288 eggs which successfully reached the hatching date, 17 (6%) were infertile.

The data in Table VI suggest that the chance of the eggs hatching successfully increases with the lateness of the season. Presumably this is because, later in the season, the vegetation is richer, thus providing greater concealment from predators.

Infertility was highest in the period June 29—July 26, this being an exceptionally rainy period during 1944. Of 133 eggs laid during this period which successfully reached the hatching date, as many as 13, or 10%, were infertile. Of the 155 eggs laid in other periods only 4 (about 2½%) were infertile.

PART II.

BY

DAVID LACK.

(Edward Grey Institute of Field Ornithology).

OBSERVERS PARTICIPATING.

The following observers kindly supplied clutch-data: R. H. Brown, Cumberland 1918-42, 61 nests; J. H. Owen, Essex 1915-37, 481 nests, and Central Wales 1938-45, 63 nests; C. J. Pring, Somerset 1919-45, 30 nests; A. Whitaker, Derby-Yorks border 1900-45, 130 nests, and 30 in other parts of England; late F. C. R. Jourdain (diaries in Edward Grey Institute) Oxford district and Derbyshire 1882-1939, 32 nests.

BREEDING-SEASON.

Nests were dated as described in the study of the Robin (Lack, 1946). A. Whitaker recorded the approximate state of incubation, from which the date of laying could be estimated, other observers sometimes did this, while for those nests for which such data were not available, five days was subtracted from the date of finding to give an approximate date for the completion of the clutch. The breeding-season cannot be accurately assessed from the records received as observers did not search equally intensively at all seasons, but the records provide a rough indication.

TABLE VII. APPARENT BREEDING-SEASON.

Period.		Percentage of total nests found (out of 388 nests)
April 8-21	...	2%
April 22-May 5	...	7%
May 6-19	...	23%
May 20-June 2	...	26%
June 3-16	...	12%
June 17-30	...	10%
July 1-14	...	8%
July 15-28	...	6%
July 29-Aug. 11	...	5%
Aug. 12-25	...	1%
Aug. 26-Sept. 8	...	0.3%

NOTE.—J. H. Owen's records for Essex were omitted as they refer solely to the school summer term, and he was not resident there in April or August.

The breeding-season is an extended one, nests being not uncommon from the second half of April until the end of the first half of August. The peak week was May 20-26, and this was also found by J. H. Owen for his 481 Essex nests (not included in Table VII). The earliest recorded nest was April 15th and the latest September 11th, both by R. H. Brown in Cumberland.

Seasonal Variations in Clutch Size. These are set out in Table VIII for all 809 English nests.

TABLE VIII. SEASONAL VARIATIONS IN CLUTCH-SIZE IN ENGLAND.

Period.	No. of nests found	Percentage of nests found consisting of						Average Clutch.
		c/1	c/2	c/3	c/4	c/5	c/6	
April 8—								
May 5	35	—	6%	49%	46%	—	—	3.4
May 6-12	64	2%	19%	47%	33%	—	—	3.1
May 13-19	115	1%	17%	51%	30%	1%	—	3.1
May 20-26	147	—	17%	31%	48%	5%	—	3.4
May 27—								
June 2	125	1%	16%	22%	58%	3%	—	3.5
June 3-9	48	—	6%	29%	56%	6%	2%	3.7
June 10-16	54	2%	24%	35%	35%	4%	—	3.1
June 17-23	51	2%	10%	47%	35%	6%	—	3.3
June 24-30	72	—	15%	46%	36%	3%	—	3.3
July 1-7	33	—	9%	55%	36%	—	—	3.3
July 8-21	35	3%	14%	49%	35%	—	—	3.1
July 22—								
Sept. 8	30	3%	3%	70%	20%	3%	—	3.2

The data in Table VIII shows that, for England as a whole, the average clutch-size of the Yellowhammer shows a marked increase about May 20th, and a marked decrease about June 10th. A similar seasonal increase followed by a decrease was found for the Robin (Lack, 1946) and also holds for many other European passerine birds (Lack, 1947). A comparison between Tables V and VIII shows that, in Oxfordshire in 1944, the average clutch-size did not decrease until the end of June, some three weeks later than for England as a whole over a period of years. This fits unpublished data for the Robin that, while the average clutch-size over a long period of years shows a smooth trend of increase and then decrease, the seasonal average in any particular year does not necessarily follow the same trend. The irregularities are presumably correlated with irregularities in the weather in the year in question.

The seasonal variations in the average clutch-size of the Yellowhammer are by no means confined to England, as shown by the following figures for Germany and Eastern Galicia (the Lwow-Tarnopol region).

TABLE IX. SEASONAL VARIATIONS IN CLUTCH-SIZE IN CONTINENTAL EUROPE.

Period.	No. of Nests of					Average
	c/3	c/4	c/5	c/6		
A. BERLIN REGION (Haun, 1931)						
April	—	13	2	—	4.1
May	—	38	23	2	4.4
June	—	30	16	3	4.4
July	1	8	11	—	4.5
B. EASTERN GALICIA (Prazak, 1897)						
April, May ...	—	2	28	6	5.2	
June	—	8	23	5.7	
July, August ...	—	19	11	—	4.4	

Table IX shows that in Continental Europe, as in England, average clutch-size tends to increase from April to June. After June, a marked decrease is recorded for Eastern Galicia. The apparent slight increase recorded for the Berlin region in July is not significant, and Rey (1912), who worked in the Leipzig-Halle district of Saxony, east of Haun's area, recorded a decrease in average size for later clutches, giving 5 as the usual first clutch, 4 for the second brood, and 3-4 for the third brood.

REGIONAL VARIATIONS.

The Yellowhammer shows the same regional trends in clutch-size as the Robin and other passerines (Lack, *loc. cit.*), viz. an increase in average size from south to north and also from west to east. As regards the former, Collet (1921) gives the usual clutch in Norway as 5 sometimes 4, whereas in England it is only 3-4. As regards the latter, the usual clutch in England is 3-4, in Germany 3-5 (Niethammer, 1937) or 4-5 (Haun, 1931), and in Eastern Galicia 4-6 (Prazak, 1897). The causes of these regional variations are discussed elsewhere (Lack, 1947).

The data are not sufficient to show whether there are regional variations in clutch-size within Britain. A comparison of Tables V and VIII shows that the average clutch-size in Oxfordshire in 1944 was apparently higher than in England as a whole over a period of years. However, this is misleading. R.P. visited and checked all his nests, thus excluding the possibility of incomplete clutches. A very few of the latter may have been inadvertently included by some of the other observers. More important, R.P.'s average for nests found with fresh eggs was slightly higher than for nests found in an advanced state of incubation, showing that occasionally an egg disappears. The same is revealed by A. Whitaker's data, since for 95 clutches with fresh or slightly incubated eggs, the average was 3.69 eggs, and for 34 clutches with partly or deeply incubated eggs the average was only 3.44 eggs, a difference of $\frac{1}{2}$ egg. Selecting from

A. Whitaker's data only those nests found with fresh eggs, the average clutch-size for the Derby-Yorks border shows no significant difference from that for Oxfordshire, when comparisons are made at the same season of the year.

PARASITISM BY THE CUCKOO.

Of 149 Oxfordshire nests found by R.P., none was parasitized by the Cuckoo (*Cuculus canorus*), though the latter is a common bird in the district. Of 265 nests found by A. Whitaker near the Derby-Yorks border, two contained a Cuckoo's egg. The Yellowhammer may therefore be reckoned a very uncommon host of the Cuckoo in the districts concerned.

SUMMARY OF PART I (R. Parkhurst).

1. Nests of the Yellowhammer were placed higher above the ground late in the nesting-season than they were at the beginning.
2. The commonest sites were in hawthorn, sloe and bramble.
3. Laying was common until August 9th, but uncommon thereafter.
4. The average clutch was smaller in the second half of May than it was in the second half of June, but declined after the latter date.
5. The egg-mortality was greatest early in the season, and least late in the season.

SUMMARY OF PART II (D. Lack).

1. For England as a whole, the main laying season extends from the last week in April to the end of the first week in August.
2. Average clutch-size is highest about the first week of June, and is smaller before and after this period. Rather similar seasonal variations are found in Continental Europe.
3. The average clutch-size is greater in the north than the south of Europe, and greater in Central Europe than further west.

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RECOVERY OF MARKED BIRDS

COMMUNICATED BY

E. P. LEACH.

Hon. Sec. Bird-Ringing Committee, British Trust for Ornithology.

No. Ringed. Recovered.

Rook (*Corvus f. frugilegus*).

- 300799 Ravenglass (Cumb), 6.4.38. Where ringed, 9.5.46.
ad. by S. Marchant.
- 321026 Evesham (Worcs), 23.3.41. Where ringed, 19.5.46.
ad. by A. J. Harthan.

Starling (*Sturnus v. vulgaris*).

RINGED AS YOUNG.

- TV.225 Evesham (Worcs), 18.5.44. Kilworth (Cork), 17.12.45.
by A. J. Harthan.

RINGED AS FULL-GROWN

- WL.943 Thornton Dale (Yorks), Winterton (Lincs), 3.2.46.
3.1.46, by R. M. Garnett. [41 m. S.]
- NK.962 York, 30.9.38, by Bootham School. Where ringed, —.10.45.
- SH.959 Ditto 14.12.44. Barnsley (Yorks), 13.2.46.
[31m. SSW.].
(considered to be continental winter-visitor).
- SK.334 Ditto 5.2.46, by Bootham School. Grantham (Lincs), 24.3.46.
[75m. SSE.].
- SD.359 Ditto 23.2.42. Ringköbing (Jylland), Denmark,
1942.
- SB.64 Ditto 26.1.42. Aaby (Fyn), Denmark, 24.9.45.
- WD.602 Evesham (Worcs), 22.12.38, by A. J. Harthan. Calmpthout (Antwerp), Belgium,
20.2.40.
- WM.667 Ettington (Warwicks), 10.3.39, by C. A. Norris. Ockenburgin (Zuid Holland),
11.11.42.
- TM.337 Gerrard's Cross. (Bucks.), 2.1.40, by Cambridge B.C. Baldock (Herts), —.11.45.
[34m. NNE.].
- YW.989 Hartley, (Kent), 25.8.37, by A. Clark. Bexley (Kent), 11.9.45.
[8mi. NW.].
- WE.145 Dymchurch, (Kent), 26.12.38 by A. H. Bishop. Alost, E. Flanders, 26.1.40.
- TJ.549 Horsham (Sussex), 22.2.40, by Christ's Hosp. N.H.S. Heyst, W. Flanders, 16.10.40.
- WL.28 Feock (Cornwall), 8.12.39, by P. Maclarens. Knocke, W. Flanders, 23.10.40.

Chaffinch (*Fringilla coelebs*).

- TK.230 Skokholm Bird Obs., 27.10.39. Hoboken (Antwerp), Belgium,
migrant. 6.10.45.

Whitethroat (*Sylvia c. communis*).

- CH.661 Mortimer (Berks), 22.7.44, Where ringed, 17.6.45.
by Oxford Orn. Soc.

Song-Thrush (*Turdus e. ericetorum*).

- SF.353 Chartley (Staffs), 23.5.43, Praze (Cornwall), 10.12.45.
young, by A. H. Johnson. [235m. SSW.].
- YK.972 Brightwell (Suffolk), 19.5.37. Ostend, West Flanders, 28.12.39.
young, by the late A. Mayall.

No.

Ringed.

Recovered.

Blackbird (*Turdus m. merula*).

RINGED AS FULL-GROWN.

- SJ.917 Avoch (Ross), 14.12.45, by Brora (Suth), 14.6.46.
by J. Lees. [33m. NNE.].
- ZR.735 Isle of May Bird Obs., 28.3.36 Sebbersund (Jylland), Denmark,
1942.
- KD.657 Great Budworth (Ches), Where ringed, 29.3.46.
21.12.38, by A. W. Boyd.
- TR.216 Belfast, 28.1.45, by J. Harewood (Yorks), 28.3.46.
Cunningham.

Hedge-Sparrow (*Prunella modularis occidentalis*).

- JD.918 Great Budworth (Ches), Where ringed, 4.1.46.
20.8.38, ad, by A. W. Boyd.

House-Martin (*Delichon u. urbica*).

- HP.895 Ballater (Aberdeen), 4.7.45, Montrose (Angus), 29.9.45.
young, by G. Waterston. [36 m. S.E.].
- DV.476 Andreas, I. of Man, 17.6.45, Where ringed, —.6.46.
young, by Cowin, Crellin,
Ladds and Williamson.

Peregrine Falcon (*Falco p. peregrinus*).

- 404631 St. Mary's Loch (Selkirk), Laurencekirk (Kincardine),
—.5.39, by Midlothian O.C. —.10.40. [95 m. NNE.].
- 404632 Ditto —.5.39. St. Abb's (Berwick), —.5.40.
[51 m. NE.].
- (Two birds of the same brood).
- 404810 Black Mts. (Brecon), 29.5.43, Llanbrynmair (Mont.), 11.10.46
by B. Campbell [49 m. NNW.].

Kestrel (*Falco t. tinnunculus*).

- 327088 Alwinton (Northumb.), Fort William (Inverness), —.1.46.
27.5.45, young, by Ash and [150 m. N.W.].
Ridley.
- 305259 Madingley (Cambs), 30.5.38, Coton (Cambs.), 12.5.45.
young by P. Maclarens. [2 m. SE.].

Buzzard (*Buteo b. buteo*).

- AD.1112 Sedbergh (Yorks), 17.6.45, Yorkshire (near Barnard Castle),
young, by Sedbergh Sch. 4.3.46. [24 m. ENE.].

Heron (*Ardea c. cinerea*).

RINGED AS YOUNG.

- 503324 Ballater (Aberdeen), 10.7.45, Bankfoot (Perth), 10.1.46.
young, by A. Watson. [40 m. SSW.].
- 503223 Shrewsbury (Salop), 30.6.46, Lea Marston (Warwick), 12.8.46.
by Shrewsbury School. [45 m. ESE.].
- 503234 Ditto 30.6.46. Kinnerley (Salop), 10.8.46.
[13 m. WNW.].
- 114610 Beckley (Sussex), 11.5.35, Royan (Charente Inf.), France,
young, by P. Hollom. —.11.45.

No.

Ringed.

Recovered.

Teal (*Anas c. crecca*).

RINGED AS FULL-GROWN.

311307	Stranraer (Wigtown), 5.3.41, by J. Law.	Karvia, S.W. Finland, 28.5.41.
RINGS ISSUED TO WILDFOWL INQUIRY COMMITTEE		
902693	Pembroke,	3.11.45. Allenheads (Northumb.), 3.5.46. [250 m. NNE.].
903238	Ditto	4.1.46. Aldeburgh (Suffolk), 19.8.46. [280 m. ENE.].
903374	Ditto	14.1.46. Hopton (Suffolk), —.1.46. [285 m. ENE.].
903354	Ditto	14.1.46. Allhallows (Kent), 25.8.46. [235 m. E.].
903304	Ditto	8.1.46. Clevedon (Somerset), 27.1.46. [93 m. ESE.].
902936	Ditto	11.12.45. Martock (Somerset), 17.1.46. [103 m. SE.].
900977	Ditto	2.10.45. Magherafelt (Londonderry), 21.1.46
903012	Ditto	17.12.45. Athy (Kildare), 30.12.45.
902712	Ditto	12.11.45. Kilmuckridge (Wexford), 7.1.46.
900713	Ditto	29.12.39. Kanin Pena., North Russia, 3.6.45.
902676	Ditto	30.10.45. Joensuu, S.E. Finland, 20.8.46.
900962	Ditto	29.9.45. Ainali, Central Finland, 21.7.46.
902244	Ditto	31.1.39. Haukivuori, Central Finland, 20.8.43.
901829	Ditto	19.12.38. Ylitorkio, N.W. Finland, 26.5.39.
901261	Ditto	8.11.38. Pudasjärvi, W. Finland, 16.5.40.
901758	Ditto	19.12.38. Bay of Liminka, W. Finland, 23.8.40.
901032	Ditto	31.10.39. Raahen, W. Finland, 10.9.40.
903568	Ditto	24.1.46. Pihlajavesi, S.W. Finland, spring 46.
902396	Ditto	1.10.39. Arjeplog, Swedish Lapland, 7.11.43.
902657	Ditto	18.10.45. Lulea, Swedish Lapland, 12.6.46.
902337	Ditto	21.9.39. River Vorma, S. Norway, 18.4.40.
903588	Ditto	26.1.46. Randers (Jylland), Denmark, 1.8.46.
901430	Ditto	3.12.38. Holbaek Fjd. (Sjaelland), Denmark, 8.8.44.
902159	Ditto	7.1.39. Ditto 16.9.40.
900666	Ditto	22.12.39. Purmerend, N. Holland, 8.11.40.
903464	Ditto	9.1.46. Oudenarde, E. Flanders, 20.2.46.
902787	Ditto	23.11.45. Marck (Pas-de-Calais), France, 2.3.46.
903371	Ditto	14.1.46. Quillebœuf (Eure), France, 25.2.46.
900749	Ditto	1.1.46. Serra Capriola (Apulia), Italy, —.12.41.
900934	Ditto	2.2.40. Chioggia (Venezia), Italy, 27.12.43.
902569	Abbotsbury (Dorset)	24.1.46. Liperi, S.E. Finland, 5.6.46.
900417	Ditto	20.12.38. Kardasova Recice (Southern Bo- hemian), C.S.R., 21.7.40.
902563	Ditto	23.1.46. Dovre Fjeld, Norway, 5.8.46.
900295	Ditto	16.11.37. Ringköbing Fjd. (Jylland), Denmark 15.9.41.

RINGS OF THE ORIELTON DECOY.

.3165	Pembroke,	9.1.38. Horton-in-Craven (Yorks.), 25.11.45 [187 m. NNE.].
2081	Ditto	28.1.37. Ylitornio, N.W. Finland, 8.8.39.
1365	Ditto	20.11.36. Ranua, N. Finland, 4.9.40.
	(Re-trapped at decoy previously, 24.10.38).	
1300	Ditto	9.11.36. Borre, Moen, Denmark, 9.11.42.

No.

Ringed.

Recovered.

Wigeon (*Anas penelope*).

RINGED AS FULL-GROWN.

- 401672 Stranraer (Wigtown), 26.1.38, Kozhva River (Perm), E. Russia
by J. Law. 21.6.45.
900266 Dereham (Norfolk), 11.2.38. Oostzaan, N. Holland. —.12.45.
by Wildfowl Inq. Ctee.

Pintail (*Anas a. acuta*).

- Or.4271 Pembroke, 16.1.40. Oravais, W. Finland, 1940.

Tufted Duck (*Aythya fuligula*).

RINGED AS FULL-GROWN.

- 305108 St. James's Park, London, Castleford (Yorks), 29.5.40.
20.12.45, by London N.H.S [160 m. NNW.].
313992 Ditto 9.12.44. Canvey I. (Essex), 25.1.46.
[32 m. E.].
Or.4212 Pembroke, 1.1.40. Where ringed, 27.2.46.
Or.3933 Ditto 24.1.39. Iisalmi, Central Finland, 1.10.39.

Cormorant (*Phalacrocorax c. carbo*).

RINGED AS YOUNG.

- 121947 Maughold Hd., I.O.M., Pembroke Dock, 8.8.46.
8.8.45, by Cowin, Crellin,
Ladds and Williamson.
121416 Pembrokeshire, 16.6.38. by Llanelly (Carms). 13.8.45.
Skokholm Bird Obs. [38 m. E.].
126376 Lambay (Dublin), 13.6.39, by Carnsore (Wexford), 2.2.46.
Skokholm Bird Obs. [95 m. S.].
126234 Ditto 13.6.39. Piltown (Kilkenny). 11.2.46.
[100 m. SSW.].
122575 Roundstone (Galway). Turbot I. (Galway). —.5.46.
24.6.38, by S. Marchant. [10 m. N.W.].

Shag (*Phalacrocorax a. aristotelis*).

- 126288 Lambay (Dublin), 13.6.39. Killinchy (Down), 30.1.46.
young, by Skokholm Bird [70 m. N.].
Obs.
126324 Ditto 13.6.39, adult. Ballyhalbert (Down), 29.12.45.
[75 m. N.].

Gannet (*Sula bassana*).

RINGED AS YOUNG.

- 503421 Big Scar (Wigtown), 11.8.45, Bilbao (Vizcaya), Spain, 6.11.45.
by J. Crosthwaite.
126174 Grassholm (Pem), 11.7.45, Iles de Gléhaus (Finistère), France,
by Skokholm Bird Obs. 23.11.45.
502380 Ditto 15.8.39. Bay of Biscay, 46° 35' N., 26.1.46.

RINGED AS FULL-GROWN.

- 125862 Grassholm, 11.7.45, by Morecambe (Lancs). 22.9.45.
holm Bird Obs. [190 m. NE.].
126193 Ditto 2.5.46. Jard (Vendée), France. 26.5.46.
125875 Ditto 11.7.45. Mouth of Gironde (Charente Inf.),
France, 29.10.45.

No.

Ringed.

Recovered.

Manx Shearwater (*Puffinus p. puffinus*).

RINGED AS ADULT.

AT.230	Skokholm Bird Obs., 10.7.37.	Where ringed, 17.5.46. (also 1938 and 1939).
317399	Ditto 25.7.38.	Ditto 28.4.46. (also 1939, 1490, 1941).
AT.6100	Ditto 26.8.46.	Ipstones (Staffs), 29.8.46.
317997	Skomer (Pemb), 19.5.46.	St. Bees (Cumb), 23.7.46.

Fulmar Petrel (*Fulmarus g. glacialis*).

318913	Rosemarkie (Ross), 11.7.45, ad. by J. Lees.	Where ringed, 10.7.46. (in same nest).
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Wood-Pigeon (*Columba p. palumbus*).

RINGED AS YOUNG.

327357	Fyvie (Aberdeen), 30.5.45, for Wood-Pigeon Inq.	Cadder (Lanark), —.12.45. [120 m. SW.]
327062	Blagdon (Northumb.), 8.4.45, by Ash and Ridley.	Haswell (Durham), —.12.45. [23 m. SSE.]
326835	Ditto 17.8.44.	Cloughjordan (Tipperary), 21.11.45.
327490	Andreas, I. of Man, 22.8.45, by Cowin, Crellin, Ladds, and Williamson.	Whitchurch (Salop), —.1.46.
303502	Evesham (Worcs), 20.5.45, by A. J. Harthan	Tanworth-in-Arden (Warwick), —.1.46. [15 m. NNE.]

Stock-Dove (*Columba oenas*).

RW.1078	Blagdon (Northumb.), 27.7.45, young, by Ash and Ridley.	Hartlepool (Durham), 9.12.45. [31 m. SSE.]
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Oyster-catcher (*Hæmatopus ostralegus occidentalis*).

RINGED AS YOUNG.

RV.9608	Drumochter (Inverness), 10.6.39, by Midlothian O.C.	Burton Marshes, Wirral (Ches.), 17.9.39. [250 m. SSE.]
324835	Smeale, I. of Man, 24.6.43, by Cowin, Crellin, Ladds, and Williamson.	Gorran Haven (Cornwall), 12.2.46.
314615	Ditto 1.8.45.	l'Aiguillon (Vendée), France, 1.5.46.

Lapwing (*Vanellus vanellus*).

RINGED AS YOUNG.

218483	Great Mytton (Yorks), 6.7.38, by C. Oakes.	Ormskirk (Lancs), 1.1.46. [24 m. SW.]
233385	Padiham (Lancs), 24.5.45, by C. Oakes.	Augustfehn (Oldenburg), Germany, 27.3.46.
224464	Fallaght (Dublin), 17.5.45, by F. W. Fox.	Donabate (Dublin), 14.2.46. [16 m. NE.]

Curlew (*Numenius a. arquata*).

400949	Greystoke (Cumb), 27.5.35, by late H. J. Moon.	Frodsham (Ches), 14.9.46.
307506	Bolton-by-Bowland (Yorks), 22.6.38, by R. Carrick.	Buttevant (Cork), —.9.46.
303933	Andreas, I. of Man, 10.6.38, young, by Manx F.C.	Where ringed, 3.1.46.

No.	Ringed.	Recovered.
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Sandwich Tern (*Sterna s. sandvicensis*).

- 231494 Ringdufferin (Down), 22.7.45, Cape Francis (C.P.), South Africa,
young, by V. H. Spry. 3.1.46.

Arctic Tern (*Sterna macrura*).

- YS.607 Farne Is. (Northumb.), Where ringed, 20.6.46.
27.6.38, young, by Mrs. Hodgkin.

Black-headed Gull (*Larus r. ridibundus*).

RINGED AS FULL-GROWN.

- 313975 Westminster, London, Putney, London, 19.1.46.
24.2.40, by London N.H.S.
323218 Ditto 15.12.42. Where ringed, 16.2.46.
327029 Putney, London, 19.1.46. Kristianstad, Sweden, 5.5.46.
RV.7929 Littleton Resr. (Middlesex), Vaasa, W. Finland, —.5.40.
8.2.35, by P. Hollom.

Common Gull (*Larus c. canus*).

RINGED AS YOUNG.

- 327148 L. Carra (Mayo), 27.5.45, by River Cashen (Kerry), 8.11.45.
R. F. Ruttledge. [90 m. S.].
324131 Ditto 14.6.42. where ringed, —.5.46.
324156 Ditto 14.6.42. Ditto 25.5.46.
325441 Ditto 23.6.43. Ditto 5.5.46.

RINGED AS FULL-GROWN.

- RX.6772 Littleton Resr. (Middlesex), Uusikaupunki, S.W. Finland,
10.3.39, by P. Hollom. 2.7.41.

Herring-Gull (*Larus a. argentatus*).

- 404276 Badbea (Caithness), 2.7.36. Off Tarbat Ness (Ross), —.7.46.
young, by E. Cohen. [23 m. SSW.].

Lesser Black-backed Gull (*Larus fuscus grællsii*).

- AB.5422 Walney I. (Lancs), 16.6.36, Morecambe (Lancs), 31.7.46.
young, by late H. W. Robinson. [12 m. E.].

Razorbill (*Alca torda britannica*).

- AV.612 Skokholm Bird Obs., 18.7.39, Polkerris (Cornwall), 23.3.46.
young. [100 m. S.].
AV.865 Ditto 6.7.40, adult. Where ringed, 28.5.46.
AV.496 Ditto 10.7.39, adult. Aberforest Bay, (Pem), 15.5.46.
[30 m. NE.].

Moorhen (*Gallinula ch. chloropus*).

- 404422 York, 14.11.45, ad. by Ferrybridge (Yorks), 2.1.46.
Bootham School. [20 m. SW.].

NOTES ON THE FOOD OF SOME BRITISH BIRDS

BY

JAMES W. CAMPBELL.

As there is little or no information in *The Handbook of British Birds*, concerning the food of the Shetland Starling (*Sturnus vulgaris zetlandicus*), Hebridean Stonechat (*Saxicola torquata theresæ*), Iceland Redshank (*Tringa totanus robusta*), and Irish Red Grouse (*Lagopus scoticus hibernicus*), it is felt that these notes may be of some value, even though they refer to only a few specimens. Most of the birds were obtained for the late Mr. H. F. Witherby when *The Handbook* was being prepared, but unfortunately it was impossible to complete the food findings in time for their inclusion.

The results for Golden Plover (*Charadrius apricarius*) and Barnacle Goose (*Branta leucopsis*) also seem worthy of publication, as there is surprisingly little information available at present on their feeding habits in this country. They are also of interest for comparison with results which were obtained previously, when similar methods were employed.

I wish to acknowledge my thanks to Dr. K. G. Blair, Miss M. S. Campbell, Dr. I. Gordon, Mr. W. R. Sherrin, Mr. J. R. leB. Tomlin and Mr. A. J. Wilmott, for their identifications of material.

The numbers in brackets refer to the actual number of specimens of the various items identified.

SHETLAND STARLING (*Sturnus vulgaris zetlandicus*).

Three juveniles examined, North Uist, June 18, 1936.

The following were identified :—

(a) Larvae—Diptera: TIPULIDÆ (20).

(b) Coleoptera—*Carabus clathratus*, *Nebria brevicollis*, *Pterostichus* sp., *Staphylinus erythropterus*, *Philonthus aeneus*, *Geotrupes stercorosus*, *Hypnoidus riparius*, *Athous haemorrhoidalis*, *Anobium striatum*, *Barynotus obscurus*, *Rhinoncus pericarpinus*. One each of above was present.

(c) Hymenoptera—ICHNEUMONIDÆ (2), *Myrmica* sp. (2).

(d) Mollusca—Gastropoda: *Helicella itala* (1).

HEBRIDEAN STONECHAT (*Saxicola torquata theresæ*).

Three, two juveniles and one adult, examined, North Uist, June-July, 1937.

The following were identified :—

(a) Larvae—Lepidoptera: NOCTUIDÆ (3). Diptera: TIPULIDÆ (2).

(b) Coleoptera—*Pterostichus* ? *strenuus* (2), *Staphylinus erythropterus* (3), *Philonthus marginatus* (1), *Philonthus* sp. (1), *Stenus brunnipes* (1), *Aphodius ater* (1), *Aphodius lapponum* (1), *Corymbites cupreus* (1), *Donacia sericea* (6), *Helops laevioctostriatus* (1), *Barynotus obscurus* (1), *Sitona* sp. (1).

(c) Hymenoptera—ICHNEUMONIDÆ (4).

ICELAND REDSHANK (*Tringa totanus robusta*).

Two examined, North Uist, November, 1938.

The following were identified:—

(a) Larvae (1)—Diptera: RHAGIONIDÆ.

(b) Mollusca (5)—Gastropoda: *Hydrobia ulvae*, *Helicella itala*, *Littorina saxatilis*.

(c) Seeds (1)—*Hippuris vulgaris*.

BARNACLE GOOSE (*Branta leucopsis*).

Thirteen examined, North Uist, January and February, 1937.

Result:—Vegetable matter formed 100% of the food taken. This was made up as follows:—

(a) Green grass=85.4%. *Festuca ovina* formed the bulk of this.

(b) Leaves and stems of clover=2.5%. *Trifolium repens* and *Trifolium dubium* identified.

(c) Green leaves of other plants=11.5%. *Ranunculus ficaria*, *Cochlearia* sp., *Montia fontana*, *Galium saxatile*, *Plantago coronopus*, *Rumex acetosa*, *Luzula pilosa*, identified.

(d) Heather, moss, liverwort and seeds=0.6%.

Remarks:—These findings are very similar to those obtained previously in the same area, see *antea*, Vol. xxx, p. 213.

GOLDEN PLOVER (*Charadrius apricarius*).

Twenty-three examined, North Uist, October and September, 1936 and 1937.

Result:—Vegetable matter=23.4%. Animal matter=76.6%.

The vegetable matter was made up as follows:—

(a) Grass, moss and fragments of green leaves (*Bellis perennis*, *Trifolium repens*, identified).

(b) Seeds—*Stellaria media*, *Chrysanthemum segetum*, *Polygonum* sp., *Plantago lanceolata*, and oat and rye.

The animal matter was made up as follows:—

(a) Larvae=11.2%—Coleoptera: *Harpalus* sp., *Pterostichus* sp., *Melolontha* sp. Lepidoptera: NOCTUIDÆ. Diptera: BIBIONIDÆ, *Dolopius* sp. TIPULIDÆ (including a few pupa).

(b) Insects other than larvae=26%.—Dermaptera: *Forficula auricularia*. Hemiptera-Homoptera: *Philaenus spumaris*. Coleoptera: *Notiophilus substriatus*, *Dyschirius globosus*, *Helophorus aquaticus*, *Tachyporus* sp., *Staphylinus aeneocephalus*, *Xantholinus glabratus*, *Simplicaria semistriata*, *Dryops griseus*, *Aphodius fimetarius*, *Aphodius prodromus*, *Aphodius luridus*, *Chrysomela staphylea*, *Galeruca tenaceti*, *Otiorrhynchus rugosostriatus*, *Barynotus obscurus*, *Alophus triguttatus*, *Sitona lineellus*, *Sitona lineolatus*, *Phytomyzus* sp.

Mollusca=36.9%.—*Vallonia pulchella*, *Cochlicopa lubrica*, *Helicella virgata*, *Helicella?* *heripensis*, *Cochlicella acuta*, *Oxylilus alliarius*, *Vitrina pellucida*, *Agriolimax agrestis*, *Cardium edule*.

(d) Earthworms 2.5%.

Remarks:—All were obtained on the North Uist machair country, and the results are interesting for comparison with those obtained from a similar habitat in Benbecula in 1935, see *antea*, Vol. xxx, p. 214. The results then were:—Vegetable matter=23%. Animal matter=77%. The same technique was used in both examinations.

Three examined, North Uist, August-September, 1937, contained in addition, HEPIALIDÆ larvae (*Lepidoptera*) and remains of ICHNEUMONIDÆ (*Hymenoptera*).

IRISH RED GROUSE (*Lagopus scoticus hibernicus*).

Three examined, North Uist, November and December, 1937, contained mainly the shoots of *Calluna vulgaris*; a few seed heads were also present.

NOTES.

LARGE CLUTCH OF MAGPIE'S EGGS.

ON April 26th, 1946, I found near Portchester, Hants., the nest of a Magpie (*Pica p. pica*) containing eleven eggs, all very round in shape and smaller than usual. Only one hen was observed at the nest, which is in a hawthorn and has been used for years ; it is now a huge structure.

H. E. WOODS.

“ANTING” OF STARLING.

WITH reference to the notes on this subject (*antea*, pp. 84, 212) ; on July 23rd, 1946, I watched the actions of a family of Starlings (*Sturnus v. vulgaris*), which were busily feeding on a swarming ant's nest. The family consisted of four juveniles and one adult male. One of the juveniles was noticed picking up ants in its bill and then pushing the bill with the ants underneath its wing. The ants could be seen clearly in the bill before it was pushed under the wing, but not when the bill was withdrawn. Either the ants were deposited there or the Starling had swallowed them. Another of the juvenile Starlings also began this curious behaviour; this bird had to “sit on its tail” before being able to push its bill under a wing. The ants were deposited(?) by both birds under the wings but nowhere else upon the body. I noticed particularly that the adult Starling did not indulge in this process of “anting.” The ants were small red ones and there were some winged specimens amongst them.

LESLIE GREGORY.

RHYTHMICAL CALLING OF CHAFFINCHES ON MIGRATION.

WHILE watching migration at Bielefeld, Germany, from October 12th until the 31st, 1945, I noticed an unusual type of calling by Chaffinches (*Fringilla c. coelebs*) resting on the pines on top of a hill which formed a barrier in the path of the movement. Chaffinches landed on the trees for one or two minutes after they had climbed from the plains. While perched they most frequently used the “pink” call, and I found that flocks called rhythmically: every three seconds or so most of the Chaffinches would call for about a second or two, three or four times in succession. A very definite rhythm was noted. This would then break down and the individual calling continue. This was not an immediate prelude to flight. Just before the party took off, the call-note would usually change from the “pink” to the “tup” note. This rhythmical calling may help to increase the excitement which seems to be necessary before a movement of this nature can start or continue.

P. J. CONDER.

YOUNG BIRDS RETURNING TO NEST.

TOWARDS the end of August, 1924, I had under observation a nest of the Bearded Tit (*Panurus biarmicus*), which, incidentally, was built low down in a tamarisk growing at the edge of a ditch in a reed-bed. According to my notes taken at the time the first young bird left the nest on September 5th. There were five nestlings and all were out of the nest the next day. For the succeeding five days all the

young remained in the reeds in the vicinity of the nest, but returned to it about 7 o'clock in the evening, being apparently marshalled to it by their parents, who were fussing about all the time.

J. B. WATSON.

DISPLAY FLIGHT OF WILLOW-WARBLER.

WITH reference to the note of Mr. R. H. Dunt (*antea*, p. 25) on a display flight of a Willow-Warbler (*Phylloscopus t. trochilus*), I have also observed a similar flight at Acton, near Crewe, Cheshire on April 7th, 1946.

The bird concerned, obviously a cock, was singing in a hawthorn bush about five feet from the ground, when suddenly another Willow-Warbler flew past the singing bird and alighted about twenty yards away in another bush. Instantly the singing bird ceased singing and flew towards the other bird, most likely a hen, with a moth-like flight. The wings were moved slowly and deliberately.

When it was within approximately six feet of the other bird it alighted on a branch and commenced the wing-clapping action described in *The Handbook*. The hen (?) then flew away followed by the cock, flying in the normal manner. JOHN SOUTHERN.

BLACKBIRD'S CLUTCH OF TWO EGGS.

THE following case of a Blackbird (*Turdus m. merula*) laying a clutch of two eggs only may be of interest. In all my experience of this species I have never before recorded a clutch of less than three eggs, and *The Handbook* corroborates this.

The details are as follows:—in her first nesting, a Blackbird, in my garden in N. Cornwall, laid a clutch of four eggs. All were hatched and four young flew on May 2nd, 1946. This bird built a second nest, in which she laid only two eggs, both of which were hatched on June 5th. B. H. RYVES.

[Clutches of two are obviously quite unusual, but if found would tend to be assumed to be incomplete.—EDS.]

VARIETIES OF BRITISH ROBIN.

MR. P. Clancey's note (*antea*, p. 281) recalls a Robin (*Erithacus rubecula melophilus*) which I saw on March 13th, 1944, at Troedyrhiwfuwch in the Rhymney Valley, South Wales. At first I thought its breast was covered with grime owing to the industrialized habitat, but I then saw that there was a clearly defined boundary to the orange area, which looked very pale and terminated on the upper breast, more or less where the blue throat ends in the Blue-throats (*Luscinia svecica*). The orange was bounded by the grey fringe which, of normal width higher up, had linked across the breast and extended deeply towards the belly, though, as I only examined the bird in the field, I cannot be sure that this lower part was not grimed as well; I have no doubt, however, that the upper limit was genuine. The general effect, therefore, was of a orange-throated bird with a dark blue-grey breast; the rest of the plumage appeared to be normal. BRUCE CAMPBELL.

DISPLAY OF HEDGE-SPARROW.

ON April 4th, 1945, at Englefield Green, Surrey, I watched three Hedge-Sparrows (*Prunella modularis occidentalis*) displaying. A bird in a small tree at the roadside was singing and lifting its wings in a leisurely manner to an angle of 45° above its back; once or twice it flew round with a peculiar slow flight and landed again in the same place. In a tree on the other side of the road were two other birds displaying in a similar manner, one of them singing. The non-singer—presumably a female mated to the other bird—was also seen to bend forward its head and push its beak into its breast. The display continued for about ten minutes, when I was obliged to leave.

It is difficult to feel at all certain as to the significance of this display by *three* birds. It was possibly of a territorial nature, to which explanation the fact that the two (probable) males were singing adds strength. On the other hand the sight of display between the two birds in the same tree may have stimulated the display of the other.

On March 20th, 1945, I saw a gathering of five Hedge-Sparrows which may have been of a somewhat similar nature. Two birds were singing and flicking their wings excitedly on the same sprig of a bush in which there were two more, while in an adjacent bush yet another was singing. This may have been somewhat analogous to the "singing parties" which Eliot Howard has recorded in the Whitethroat (*Sylvia c. communis*). D. J. MAY:

THE RACIAL STATUS OF HEDGE-SPARROWS FROM NORTHUMBERLAND.

C. M. N. WHITE has shown in *British Birds*, Vol. xxxi, 1937, p. 232, that specimens of Hedge-Sparrow from Lancashire, northern England, approach the Hebridean race, *Prunella modularis hebridium* Meinertzhagen, in the colour of the head. It was, therefore, with interest that I noticed similar tendencies in some examples collected in the Rothbury district of Northumberland during the winter of 1941-42. The majority are, however, quite certainly *Prunella modularis occidentalis* (Hartert) and the birds of this region would seem to consist of an inconstant population composed of intergrades between *P. m. occidentalis* and *P. m. hebridium*.

I have already dealt with the intergrades found in southern Scotland (vide *Ibis*, 1938, p. 752; 1940, p. 96) and this new discovery coupled with White's earlier observation on Lancashire birds extends the known range of these intergrades considerably further to the south than hitherto expected. P. A. CLANCEY.

MALE KESTREL PASSING PREY TO FEMALE IN THE AIR.

THE following details of an observation on a pair of Kestrels (*Falco t. tinnunculus*) were given me by a schoolboy observer, J. M. Coole, of Wrekin College, for whose reliability I am prepared to vouch.

In the latter part of April, 1946, in the West Kirby district, he saw a male Kestrel alight on a dead tree holding a mouse or vole

in its foot. The prey was not quite dead, for it struggled and was finally quieted with a blow from the bird's bill. The Kestrel then called excitedly several times, and after a short time a female came in sight screeching in a most excited manner. The male then rose into the air, still holding the prey, and hovered above the female, whereupon she turned on to her back, the male released the food, and she seized it in her foot and flew away. Although Coole revisited the place on several subsequent occasions and saw the birds, this behaviour was not observed again.

WALTER GRIFFITH.

[It is the normal habit of the male Kestrel to bring food to the female during the breeding-season and the observer's account is an excellent and accurate description of the usual procedure, except that the passing of the prey to the female in the air appears to be quite exceptional in this species. The transference normally takes place on a branch. L. Tinbergen, who carried out a most careful study of the feeding behaviour of breeding Kestrels (*Ardea*, 1940, pp. 63-98), never observed an aerial pass, and we can find no record of such in any other published observations on the subject. On the other hand when the young are on the wing the food is habitually taken from the parents in the air.—EDS.]

"INJURY-FEIGNING" OF TUFTED DUCK.

AT Great Meadow Pond, Windsor Park, Berkshire, on July 30th 1944, I watched "injury-feigning" of a Tufted Duck (*Aythya fuligula*). A female which had swum out from the reeds, followed by six ducklings, suddenly began to twist and turn on the water, flapping her wings violently. Meanwhile the young birds had swum further out and almost as suddenly the parent ceased displaying, swam after them, and led them out into the centre of the pond.

"Injury-feigning" is not recorded for the Tufted Duck in *The Handbook*.
D. J. MAY.

[“Injury-feigning” by a Tufted Duck is mentioned by W. E. Glegg (*antea*, Vol. xxxi, p. 248) and this is quoted in the “Additions and Corrections” to *The Handbook* (Vol. v, p. 277). We have not come across a case ourselves or met with any other published reference, though we suspect it is not really very unusual. Ducks when discovered with young will frequently flap off over the water for some distance in an agitated manner, and it is difficult to draw any clear line between this and behaviour which can more definitely be considered as “injury-feigning.”—EDS.]

FOOD-WASHING HABIT OF WADERS.

ON June 28th, 1944, I watched at close range a Common Snipe (*Capella g. gallinago*) feeding on a sloping mud-bank about a foot away from the edge of a pool in a disused gravel pit at Lt. Paxton, Hunts. By thrusting its bill half length into the mud it pulled out several earth-worms, taking each to the water's edge and cleaning it before swallowing.
C. F. TEBBUTT.

WITH reference to the request for further information on this subject, I am able to record this habit for the Bar-tailed Godwit (*Limosa l. lapponica*). On September 6th, 1945, on the salttings at Hayle, Cornwall, I watched a Bar-tailed Godwit feeding near a creek, to which it made repeated journeys to wash its catch each time its probing met with success. On several occasions a worm was clearly seen to be dangling from the bill. A. H. V. SMITH.

WITH reference to the previous notes on this subject (*antea*, pp. 184-5, 249) in my younger days, now rather more than 50 years since, I was often at Cuckmere Haven, Sussex, and looking up my notes I find that food-washing was sometimes witnessed by me in the following species:—Grey Plover (*Squatarola squatarola*), Lapwing (*Vanellus vanellus*), Dunlin (*Calidris alpina*), Curlew-Sandpiper (*Calidris testacea*), Greenshank (*Tringa nebularia*).

ROBERT MORRIS.

ON August 15th, 1946, I saw a Common Sandpiper (*Actitis hypoleucus*), which was standing by the edge of the water on the Exe estuary at Topsham, an instant before it swallowed a worm. I continued to observe it as it walked along near the water, and in the next two or three minutes it twice turned aside to pull a small worm out of the mud. Each time it immediately turned about, walked the few steps to the water, into which it dipped the worm, and washed it by moving it quickly from side to side a few times. It raised its head to swallow the worm, thus differing from the other waders I have seen washing worms.

The bird then walked away from the water and soon found another worm, which it swallowed there and then.

I have often seen Redshanks (*Tringa totanus*) pulling worms out of the mud in the Exe estuary and carrying them to the water several feet away, where they dipped them and swallowed them without lifting their heads. Occasionally whole flocks of some dozens of birds are seen thus engaged.

Other species of waders which I have often watched behaving similarly are the Ringed Plover (*Charadrius h. hiaticula*) and the Grey Plover (*Squatarola squatarola*). R. G. ADAMS.

ON February 9th, 1946, I watched two Green Sandpipers (*Tringa ochropus*) feeding along the edge of one of the lakes in Bretton Park, in the West Riding of Yorkshire.

One bird presently obtained a worm about 4½ins. long from a small stream entering the lake over a mud-bank. It carried the worm out into the lake, where it proceeded to wash it thoroughly, taking some four minutes in the process before finally swallowing it. JOHN C. S. ELLIS.

ON May 4th, 1932, I watched an Oystercatcher (*Hæmatopus ostralegus occidentalis*) pulling worms from mud uncovered by the tide in the estuary of the Cuckmere river, Sussex. Most of the worms found were taken to the water and shaken about in it before being swallowed. J. S. WATSON.

MOVEMENTS OF BAR-TAILED GODWITS ON MORECAMBE BAY.

ALTHOUGH Bar-tailed Godwits (*Limosa l. lapponica*) do not usually appear in large numbers at the head of Morecambe Bay, my observations on the Kent Estuary, Westmorland, over the last nine years definitely agree with those of Commander G. E. Hughes Onslow at Ayr (*antea*, p. 284) in showing a heavier migration in spring than in autumn. Comparative numbers can best be summarized by giving the greatest number of Bar-tails seen on any one day in each year. "Spring" covers the months from February to May inclusive; the only autumn occurrences were in September.

	1938	1939	1940	1941	1942	1943	1944	1945	1946
Spring	60	c.10	13	16	20	3	4	2	12
Autumn	0	1	0	0	0	0	0	0	3

From one to four birds occurred in mid-winter (December or January) in five of these years, and in 1946 a party of immatures spent the summer on the estuary (30 on June 10th, 15 on July 3rd).

J. A. G. BARNES.

KITTIWAKE NESTING IN NORFOLK

A REMARKABLE occurrence in Norfolk in 1946 has been the nesting of a pair of Kittiwakes (*Rissa t. tridactyla*) in the tern colony at Scolt Head. The nest, constructed mostly of seaweed, was built on the shingle in close proximity to nests of both Sandwich and Common Terns. Unfortunately, the first egg was taken in mistake for a Black-headed Gull's and the second proved infertile and after being brooded for 28 days was deserted.

In addition to this nesting pair, eight or ten other adult Kittiwakes and about 100 young birds in first summer plumage were present on the island throughout the summer. B. B. RIVIÈRE.

EARLY NESTING.—Correction.—We regret that the notes under this heading (*antea*, pp. 346-7) contained two errors. Under "Bullfinch" "a Herefordshire nest" should read "a Ross-shire nest", and the 1945 Nuthatch record should read "another nest at Hazelhurst, Sway, Hants., contained two eggs on April 19th (E. Cohen)."

REVIEWS.

LOCAL REPORTS.

Birmingham and District Bird Club: Twelfth Annual Report on the Birds of Warwickshire, Worcestershire and South Staffordshire, 1945.

THE section of classified notes in this report is very short compared with some other county publications and a weakness is the lack of supporting evidence for some of the records of the rarer birds. We feel sure the Editor satisfied himself as regards all of them, but we are obliged to re-iterate once again that when rarities are recorded the evidence should be available in print along with the records. For example we imagine that a Golden Eagle recorded as shot at Wannerton on December 25th (a deplorable event) was

critically examined by an ornithologist in view of the great rarity of this species in the south and its frequent confusion with the young White-tailed Eagle, but we are not given this crucial information. There are several records of Arctic Terns, a species of which casual examples on passage can only be identified with certainty under the most favourable conditions; perhaps these conditions were fulfilled, but we are told nothing. A Wood-Sandpiper record may well be perfectly correct, but the few particulars which are given are far from convincing and the description of the note as a "disyllabic 'a-chew'" is not in the least like any call of the species known to us. Again, it is a pity that the records of quite astonishing numbers of Scoters at Bittell, which we have no doubt are correct, are not accompanied by some details. No less than 13 were seen on May 25th and the same number consisting of "an adult and 12 juveniles" on October 13th, but we might surely have been told how many adult drakes, if any, there were in May and what the "adult" was (presumably a male) in October.

It is satisfactory to note that at least two pairs of Buzzards and a pair of Garganey bred in Worcestershire in 1945. We observe that a record of a Snow-Bunting on May 11th, which we commented on last year as a surprising date, should have read March 11th. There are also records of Whooper and Bewick's Swans, of a Grey Phalarope at Hagley on September 21st, and a number of the scarcer waders and waterfowl at the reservoirs and elsewhere.

Mr. J. D. Wood, returned from war-time service abroad, provides a summary of information on the status of the Woodcock in Warwickshire and Worcestershire obtained in 1934-5, and a table of the average arrival and departure dates of migrants is given based on records of the past ten years.

Report of the Cambridge Bird Club, 1945.

In this report, as in previous years, birds seen at the Sewage Farm and elsewhere in the county are treated separately. Of the Sewage Farm records, apart from that of the Black-winged Stilts already reported to *British Birds*, the most noteworthy is a well and carefully authenticated one of a male Kentish Plover on August 22nd, an addition to the three other records for the autumn of 1945, published in this journal (*antea*, p. 187). The number of records of Scaup is remarkable; one or possibly two ducks were seen on April 8th, and from early November to Christmas several individuals were present, up to no less than seven (an adult female, two immature males and four immature females) on a number of occasions after November 22nd. The usual assortment of the scarcer waders was observed, and a party of as many as seven Turnstones on August 12th may be mentioned. A Little Ringed Plover record (May 15th) is not now so unusual as it would have been a few years ago, but all the same evidence of identification might have been given, as it should have been also in the case of a Water-Pipit (October 10th) and a Rock-Pipit (March 18th). A Glaucous Gull was seen in January and a pair of Snow-Buntings on January 27th, though the latter are excluded from the Sewage Farm section, merely because they are not water birds, surely a rather illogical proceeding.

In the General Section we may note: one early Hobby on April 16th (but here again evidence should have been given, though apparently the bird was well seen), a Marsh-Harrier and no less than 12 Short-eared Owls at Fulbourne on February 3rd, Whooper Swans on the Earith Washes in January and December and about 150 Pintail there on January 20th, young Woodcock seen in the county, a Grey Phalarope at Waterbeach on November 25th, nearly 20 Black Terns on the Cam on May 21st, and an adult Little Gull near Stretham on January 23rd.

There are also sections on birds seen on the Wash in Norfolk and on the Breck. A record of an Iceland Gull in the former needs authentication, as recent evidence has shown that small Glaucous Gulls are not as easily separated from this species as used to be supposed.

Cornwall Bird Watching and Preservation Society: Fifteenth Annual Report, 1945.

THE style of the Cornwall Report is the same as in recent years and again it contains many useful notes both of the faunal type and on habits.

Broods of two and three were evidently reared from two known nests of Choughs, but there are other records of birds seen. We regret to note that the war-time edict against the Peregrine apparently resulted in the complete extermination of the local breeding stock, though we should not be surprised if the species re-established itself fairly quickly.

A record of four Kentish Plovers seen on September 21st near Daymer Bay gains indirect support from the other two records for almost exactly the same period which we have already published (*antea*, p.187), but it must be said that the evidence given is in itself scarcely sufficient to establish this unusual record satisfactorily. The birds are stated to have lacked a dark pectoral band and to have had dark legs, but "a sort of dark green" is not an accurate description of the leg-colour of the Kentish Plover, and no other details are given.

Fulmars bred for the first time at Godrevy, where birds had been present since 1939, and at Grebe Point, Morvah, but not at Trevone, the locality where breeding was proved in 1944. The nesting of Arctic Terns and Kittiwakes in Scilly has been recorded by Mr. Buxton in *British Birds*. No Spoonbills were seen in winter on the Ruan River for the first time since 1938-9, though one was seen on the Camel estuary on September 19th and two in Scilly on November 19th.

The Scarlet Grosbeak at Golant, already recorded in *British Birds*, was still about on November 15th, and amongst other occurrences of interest we may note: a Nightingale singing near Penzance in May, an Osprey seen on the Camel estuary from September 17th to 20th inclusive, a second-year Eider drake off Greenaway on April 20th, 1944, two Purple Herons on Tresco on April 17th, a Leach's Petrel seen at close range on the coast at St. Cadoc's Point during rough weather on December 24th, six Great Shearwaters seen to the S.E. of the Wolf Rock, off Land's End, on August 31st, Wood-Sandpiper at the Walmsley Sanctuary on July 30th and in Scilly on August 4th, Temminck's Stint in Scilly on August 18th, and the nesting of Quail near St. Teath. A record of a Wheatear seen in Redruth at Christmas, 1944, is cautiously square-bracketed, presumably because the observer was not an ornithologist, though the description given seems pretty convincing. But to find this caution coupled with the idea that such a description could warrant even the most tentative conclusion that the bird was a *Greenland Wheatear* is a little disconcerting! .

Eighteenth Report of the Devon Bird-Watching and Preservation Society, 1945.

THE remarkably full Devon Report contains many interesting records, but it must be admitted that some others are very trivial and might with advantage have been omitted. Considerable attention is given to habits and behaviour and to such things as early song, etc.

We note with interest that several pairs of Montagu's Harriers bred, that two pairs of Fulmars bred on Lundy and one reared a chick, and that Curlew nested again on the island. Amongst the records of the rarer visitors (in addition to the Stilts in Devon, the Snowy Owl, Kite and Grey Phalarope in West Somerset and Rose-coloured Starlings in both counties already recorded in *British Birds*) we may mention a Nutcracker, believed to be Slender-billed, at Tresham on September 6th, a melanistic Fieldfare at Stockland in January, a Wheatear seen at Morte Point from December 9th to 11th, a Black Redstart at Seaton on June 29th, two Bee-eaters in West Somerset on April 18th, a Rough-legged Buzzard at Dulverton, Somerset, on August 20th (an early date, but the legs feathered to the toes were seen), two Eagles, evidently immature White-tailed, at Shipley Bridge on April 17th and subsequently, numerous Great Shearwaters (two captured and identity checked) in the Channel in late October and the first half of November, a Turtle-Dove seen at close quarters at Porlock on December 15th, a well-authenticated Wood-Sandpiper on the Exe Estuary on August 19th, December and January records of Spotted Redshank, and a Dotterel on Ugborough Beacon, Dart-

moor, in August, 1944. There are also records of Blue-headed Wagtails in West Somerset, a Firecrest, Hoopoes, Spoonbills in winter, Whooper Swan, and a wide variety of waders and waterfowl on the coast.

A record of a Kite at Yarcombe, December 28th, would have been better for some supporting evidence, and this is quite definitely required in the case of reports of Hen-Harriers during the period when Montagu's Harriers are also present in this country and still more so in that of a Hobby supposed to have been seen in January! Two records of Marsh-Harriers in March and November are apparently sound, as the light heads were seen, though the description of the first one is distinctly odd. In the case of several other records for which certainty is not claimed, such as those of a possible Black Woodpecker, a Kentish Plover, a Pratincole, and a supposed Bustard (very dubious indeed), it would be better to adopt the very general practice of using square brackets to differentiate them from the rest. A record of a possible Goshawk should certainly be added to the square-bracketed category, and the evidence for the identification of two Richard's Pipits is quite inadequate.

Two other records are open to more positive objection. Two Rose-coloured Starlings are recorded on May 16th with the editorial comment "probably juveniles." They are described as pinkish-grey on back and breast, with bright yellow beaks. But young birds develop no trace of pink till the autumn and have not yellow beaks. A Northern Crested Tit is said to have come to crumbs on a window-sill at Torquay in January, but a glance at *The Handbook* or at skins should have convinced the Editorial committee that the idea of being able to differentiate between the races in such circumstances is quite fantastic, even if the specific identification is accepted.

An interesting record is that of two Cormorants with very white heads seen in the spring. No one has yet produced definite proof that our Cormorant ever attains the degree of whiteness on the head that is typical of the Southern race (*P. c. sinensis*) at the maximum development of this transitory feature, but evidence suggesting that this may occasionally occur is accumulating. We hope to return to this subject in *British Birds* before long.

Amongst notes on habits and behaviour, attention may be drawn to cases of possible "anting" by a Chaffinch, of a Blue Tit feeding presumed female (in January), and of Tawny Owl hooting in flight. As in previous years there are special reports on the local migration of several species. These reports are gradually accumulating a valuable body of data on migration in the south-western peninsula, and the example might well be followed by other local societies.

As already mentioned the report covers West Somerset as well as Devon, but we notice some records from Chard and elsewhere far outside West Somerset as normally understood. We suggest that local reports ought not to encroach on one another's areas; societies covering adjacent counties could surely exchange information.

Report on Dorset Birds, 1944. By the Rev. F. L. Blathwayt. (Reprinted from *Proc. Dorset Nat. Hist. and Archaeol. Soc.*, Vol. 66, pp. 130-135).

THIS Report is somewhat fuller than in the last few years and contains a number of records of interest. We are glad to note that Dartford Warblers are "all right" in an East Dorset haunt and that the Buzzard is increasing as a breeding bird in the county. Montagu's Harriers were present in the summers of both 1943 and 1944, and the great increase of the Black-tailed Godwit as a visitor to the county is emphasized.

The breeding of Kittiwakes and Lesser Black-backed Gulls on the coast and some of the other occurrences have already been reported in *British Birds* or mentioned in our notice of the 1944 Report of the Bryanston School Natural History Society. Several records of Grey Phalaropes in September are, however, additional to those already noticed by us, and a Marsh-Harrier near Weymouth on March 8th, and four Roseate Terns at Abbotsbury on April 30th and June 21st may be mentioned. A record of an Iceland Gull in 1943 needs supporting details of identification, for the reasons mentioned in our notice of the Cambridge Report above.

Report on Birds observed in Hertfordshire in 1945. By H. H. S. Hayward. (*Trans. Herts. Nat. Hist. and Field Club*, Vol. xxii, pp. 114-124)

This carefully edited Report—refreshingly free from unconvincing records—gives some particulars of the effects of the January cold spell in the introduction. The water level in the Wilstone Reservoir at Tring was again very low in autumn and the mud attracted a good many waders, including Turnstone, Knot, Little Stint, Wood-Sandpiper and Spotted Redshank, as well as an unusual number of Ruffs and Greenshank. There are also a good many records of waterfowl at the reservoirs, including an unusual party of Scaup (two adult males and four females) on April 27th and a Long-tailed Duck on October 26th. Two female Red-crested Pochards seen on February 14th and subsequently illustrate the caution unfortunately necessary with regard to records of a number of kinds of duck: it was found that two females of this species had disappeared from Woburn at about the same time. Two Snow-Buntings were seen at the Wilstone Reservoir on November 10th, almost at the same spot and date as in 1944, and a case of a Cuckoo giving both the bubbling call and the "cuckoo" is described. Particulars are given of a notable resting or assembly ground of Snipe on a field of young wheat near Watford, where the number of birds on December 19th was estimated at over 500, a remarkable, but not unprecedented, gathering.

Details are given in square brackets of a case of breeding of a pair of harriers in Bedfordshire just over the Herts boundary, which was investigated by the present writer owing to a suspicion that the birds were Hen-Harriers on account of the rather large size of the eggs, which were unfortunately taken by some boys. On the evidence available the probability seems to be rather strongly in favour of their being rather long eggs of Montagu's Harrier.

Leicestershire and Rutland County Report of Wild Birds for 1945.

This Report contains information on the local status of many species as well as on habits and behaviour. There are a good many records of waterfowl and waders from the Eye Valley, Stanford and Swithland Reservoirs, including Whooper Swan, Red-breasted Merganser (female, Stanford, March 18th), Red-necked Grebe, Bar-tailed Godwit, Curlew-Sandpiper, Little Stint, Wood-Sandpiper, Oyster-catcher and Kentish Plover, the last already recorded in *British Birds*. A Sandwich Tern at Stanford Reservoir on April 14th and nine there on May 20th provide the first records for Leicestershire. We note that the Smew is now considered a regular winter visitor. There are also several records of Snow-Buntings in January, November and December and one of a Hoopoe at Brooksby on July 13th. In connexion with a record of a possible Aquatic Warbler seen at Zouch on July 10th, about which the editors of *British Birds* were consulted at the time, a printer's error has unfortunately resulted in an unintelligible statement being attributed to the present writer; it should read that "a definite *prima facie* probability" of the bird's being an Aquatic Warbler was established.

The Committee have been at pains to satisfy themselves that all records published are reliable, and in the most unusual occurrences the evidence is, quite rightly, placed on record. We think that in a few additional cases of more "critical" identifications, such as Slavonian Grebe, the evidence might also have been given with advantage. There is only one case where we are obliged to dissent from the editor's conclusions: the evidence given for a record of two Sanderling in May—not in itself improbable—is totally unconvincing.

Mr. A. E. Jolley has some general notes on the Eye Valley Reservoir. Mr. A. Bonner records some observations on the distribution of the Lesser Whitethroat in Leicestershire; the most favoured habitat is found to be provided by "grassy bridle tracks and quiet lanes with wide grass verges contained by bushy hedges with much tangled undergrowth" and with hedgerow ash trees. Messrs. Jolley and Storer report briefly on a further season's work on the Sand-Martin.

London Bird Report for 1945. (Supplement to *The London Naturalist*).

The London Bird Report deals as usual with birds observed within twenty miles of St. Paul's and covers portions of Bucks, Essex, Herts, Kent, Middlesex and Surrey.

There are a good many records of the scarcer waders and waterfowl from the Brent and Staines Reservoirs (the causeway across the latter has now been re-opened to the public), including Red-necked Grebe, Grey Phalarope (two, Staines, September 20th and 21st), Turnstone, Knot, Little Stint, Grey Plover, Oyster-catcher and others. Events such as the breeding of Little Ringed Plovers in Middlesex and the Roller at Deptford have been recorded in *British Birds* already. Amongst others, records of three or four Great Grey Shrikes, Hoopoe, and Little Gull may be mentioned.

A record by Mr. T. Bispham of a Grey-headed Wagtail (*Motacilla flava thunbergi*) at the Brent Reservoir on April 7th is probably rightly square-bracketed in view of the way in which variants resembling forms fixed as geographical races in other areas may, in this species, occur in populations of another race. The particulars given seem, however, to make the identification about as definite as is possible in the circumstances. The chances of the bird's having been *M. f. cinereocapilla* are extremely remote.

Brief reports on a census of rookeries undertaken in connexion with the B.T.O. enquiry, on heronries in the area, Black Redstarts in London, and some observations on Starling roosts are also included. An unexpected event is the discovery of a quite large heronry at Kempton Park, Middlesex, but this is considered to represent a breakaway from the Richmond Park colony, which suffered a serious decline in 1942. The new heronry contained 61 nests, but it was not discovered till late June and it is not certain that more than 39 had been occupied. A second small colony of 5 nests was found at Little Parndon, Essex.

The captions under two photographs of male and female Black Redstarts have unfortunately been transposed.

LETTERS.

CRESTED TITS.

To the Editors of BRITISH BIRDS.

SIRS,—Writing in *British Birds* (antea, p. 214) on the question of the soft parts coloration in the Crested Tit (*Parus cristatus*) I made reference to having examined in the course of my studies "some dozens" of specimens.

It is now evident that my imperfect phrasing of the note has led to the erroneous impression on the part of many interested persons that numbers of the highly localized *Parus cristatus scoticus* were taken. The correct interpretation is that my statement as to "some dozens" refers solely to the Central European race, *Parus cristatus mitratus*, series of which were collected in the Alpine ramifications of Styria (Steiermark) and Carinthia (Kärnten), Austria, during the period June-October, 1945.

Such data as were available to me for *P. c. scoticus* substantiated my findings for *P. c. mitratus*; hence the mention of the former race in my original note.

P. A. CLANCEY.

THE BIRDS OF KENT.

To the Editors of BRITISH BIRDS.

SIRS,—Many years have elapsed since the publication by Dr. Norman Ticehurst of *A History of the Birds of Kent*. During this considerable interval much fresh and important material has accumulated, and it is now clearly desirable to prepare a new avifauna of the county.

After prior consultation with Dr. Ticehurst I have decided to undertake this work, to be published by Messrs. H. F. & G. Witherby. It is anticipated that the date of publication will be round about 1950.

I shall be most grateful to anyone who is interested and who may have notes, if they would send them to me.

JAMES M. HARRISON.

BOWERWOOD HOUSE,
ST. BOTOLPH'S ROAD,
SEVENOAKS, KENT.

INDEX.

NOTE.—The nomenclature followed in this volume is in accordance with the "Systematic List" printed at the end of Volume V of *The Handbook of British Birds* and reprinted in the revised edition of *A Check-List of British Birds*.

- acuta*, *Anas a.*, see Pintail.
 ADAMS, R. G., Notes on Turnstones using elevated perches, 184; Late Sedge-Warbler in Devon, 280; Actions of Long-tailed Duck under water, 283; "Up-ending" by Redshank and Spotted Redshank, 319; Food-washing habit of waders, 378.
 ADOLPH, P.A., Note on Effect of snow on nesting of Chiffchaff, 86.
ægyptius, *Milvus migrans*, see Kite, Black.
aeruginosus, *Circus a.*, see Harrier, Marsh.
affinis, *Sitta europaea*, see Nuthatch.
 AINSWORTH, G. H., see LORD, J.
 ALABASTER, B. H., Note on Early singing of juvenile Hedge-Sparrow, 344.
alba, *Motacilla a.*, see Wagtail, White.
alba, *Tyto a.*, see Owl, Barn-.
 ALEXANDER, H. G., Notes on Great Shearwaters in the English Channel, 55; Spring migration across the Irish Sea, 83.
 ALEXANDER, W. B., Note on Gait of Corn-Bunting, 53; Letter on Bird Observatories in the British Isles, 96; The Index of Heron Population, 1945, 201.
alexandrinus, *Leucopolius a.*, see Plover, Kentish.
 ALLEY, RONALD E., Note on Spoonbill in Gloucestershire, 90.
 ALMOND, W. E., Notes on the song of the Black-headed Bunting, 315.
alpina, *Calidris*, see Dunlin.
americana, *Anas*, see Wigeon, American.
 ANDERSON, D. R., Notes on Young Sedge-Warbblers returning to nest, 26; Barn-Owl roosting in conifer, 90.
anglicus, *Dryobates major*, see Wood-pecker, Great Spotted.
anglorum, *Regulus r.*, see Goldcrest.
 "Anting" of Starling, 84, 212, 374; of Magpie, 313.
apiaster, *Merops*, see Bee-eater.
apricaria, *Pluvialis*, see Plover, Golden.
apus, *Apus a.*, see Swift.
aquaticus, *Rallus a.*, see Rail, Water-.
arborea, *Lullula a.*, see Lark, Wood-.
argentatus, *Larus a.*, see Gull, Herring-.
aristotelis, *Phalacrocorax a.*, see Shag.
arquata, *Numenius a.*, see Curlew.
arvensis, *Alauda a.*, see Lark, Sky-.
 ASH, JOHN, Note on Barn-Owls roosting in conifers, 180.
 ASHBEE, JOHN, Note on Flock of Spotted Redshanks in Sussex in winter, 186.
 ATKINSON, R. and YEATES, GEORGE, Griffon Vulture photographed by, 275.
atricapilla, *Sylvia a.*, see Blackcap.
 Avocet in Hampshire, 128; Behaviour of, 348.
avosetta, *Recurvirostra*, see Avocet.
- BAGGLEY, WILLIAM, Note on "Anting" by Starling, 212.
 BARLEE, JOHN, and RUTLEDGE, ROBERT F., Note on Glossy Ibis and Pink-footed Geese in Co. Wexford, 182.
 BARNES, J. A. G., Notes on Feeding habits of Redshank and Black-headed Gull, 285; Movements of Bar-tailed Godwits on Morecambe Bay, 379.
 BARRAUD, E. M., Note on Wing-clapping of Turtle-Dove, 284.
 BARRETT, JOHN H., Notes on Ground display of Kentish Plover, 286; Song-period of Goldcrest, 318.
bassana, *Sula*, see Gannet.
 BAXTER, EVELYN V. and RINTOUL, LEONORA JEFFREY, Note on Black-necked Grebe breeding in Angus, 123.
 BEATON, W. and WHEATER, J. ERIC, Note on Great Spotted Wood-pecker breeding in Clackmannan, 26.
 Bee-eater, Display of, 154.

- BENTHAM, HOWARD, Note on "Injury-feigning" of Nuthatch, 214.
bernicla, *Branta*, see Goose, Brent.
 BETTS, ALFRED H., Note on Waxwings in Yorkshire, 178.
 BEVEN, G., Notes on Courtship Display of Chaffinch, 23; Courtship presentation by Starling, 116; Feeding behaviour of North Atlantic Shearwater, 122; Sun-bathing of Hedge-Sparrow, 245; Pre-coitual display of Chiffchaff, 246; "Injury-feigning" of Blackbird, 248; Food-washing of Whimbrel, 249.
 —, and THOMSON, W. W., Note on Courtship feeding of Willow-Tit, 245.
bewickii, *Cygnus b.*, see Swan, Bewick's.
biarmicus, *Panurus b.*, see Tit, Bearded.
 Bird Observatories in the British Isles, 96.
 Bird-Ringing Committee. Report of the, 171.
 Birds, Young, returning to nest, 152, 246, 313, 374.
 BISPHAM, T., Notes on Behaviour of Little Gull, 61; Status of the Corn-Bunting in Essex, 277.
 —, and RYALL, R. H., Notes on Wood-Sandpiper feeding on open shore, 57; Unusual combination of migrants in London area, 284.
 —, and WRIGHT, W. A., Note on Great Skua off Kent and Essex, 61.
 Bittern, Little, in Lancashire, 218.
 Blackbird, male, attempting to feed female, 26; Courtship feeding of, 215; Young returning to nest, 246; "Injury-feigning" of, 248; Display of, 280; Remarkable behaviour of, 318; singing in November, 320; attempting to rear four broods from the same nest, 343; Clutch of two eggs, 375.
 Blackcap, Early nesting of, in 1945, 62; imitating notes of Nuthatch, 247.
 Blackcock display, 287.
 BOND, RALPH, Note on Aggressive behaviour of Peregrine, 180.
borealis, *Puffinus kuhlii*, see Shearwater, North Atlantic.
borin, *Sylvia*, see Warbler, Garden-
 BOYD, A. W., Notes on Courtship feeding of Mistle-Thrush, 88; Kestrel following plough, 181; Display of Mute Swan, 182; Black-winged Stilts in Lancashire, 189.
brachyrhynchus, *Anser fabalis*, see Goose, Pink-footed.
 BRADY, F., Notes on Surf Scoter in Northumberland, 183; Kentish Plover in Northumberland, 187.
britannica, *Carduelis c.*, see Goldfinch.
 —, *Certhia familiaris*, see Creeper, Tree.
 —, *Tringa totanus*, see Redshank.
 BROMLEY, F. C., Note on Unusual forms of Chaffinch song, 24.
 BROOKS-KING, M., Note on Courtship-feeding of Mistle-Thrush, 179.
 BROWN, E. B., see COLLING, A. W.
 BROWN, PHILIP E., Preliminary observations on a colony of Reed-Warbblers, 290.
 BROWN, R. H., Notes on Display of Willow-Warbler, 24; Large clutches of Sky-Lark, Meadow-Pipit and Yellow Bunting, 53; Flocking of Golden Plover, 58; "Injury-feigning" by Oystercatcher, 60; Wintering Lesser Black-backed Gulls in Solway Firth area, 127; Note of Willow-Warbler, 279.
 BRUCE, A. C., Note on Arctic Skua in Hertfordshire, 287.
 BRUCE, SAMUEL, Note on Greenish Warbler in Shetland, 153.
 Bullfinch, Early nesting of, in 1945, 62, 347, 379; Food of, 341.
 Bunting, Black-headed, Notes on the song of the, 315.
 —, Cirl, photographed by YEATES, GEORGE, 112; Early nesting of, in 1946, 347.
 —, Corn-, Gait of, 53, 191, 348; in Scilly, 177; Status of, in Essex, 277.
 —, Rustic, on Fair Isle, 278.
 —, Yellow, Large clutches of, 53; and Tree-Pipit laying in same nest, 314; The clutch-size of the Yellowhammer, 358.
 BURNHAM, C. E. A., Note on Waxwings in Yorkshire, 178.
 BURTON, R. E., Note on Dotterel in Northamptonshire, 93.

BURTON, R. E., and LEES, I. J. FERGUSON, Note on Temminck's Stint in Northamptonshire, 251.
buteo, *Buteo b.*, see Buzzard.
 BUTLIN, SYBIL M., Note on Note of Willow-Warbler, 215.
 BUTTERS, F. C., Note on Turtle-Dove wintering in Devonshire, 249.
 BUXTON, E. J. M., Fertility and mortality in the nest of Swallows, 73; Notes on Arctic Tern and Kittiwake breeding in Scilly, 190; Nesting of Curlew in Buckinghamshire, 249; Letter on Oyster-catchers marked with coloured rings, 288.
 BUZZARD, Increase of, in Sutherland, 128; Early nesting of, in 1943, 347.—, Rough-legged, Photographed by SOUTHERN, H. N., 48.

calandra, *Emberiza*, see Bunting, Corn.-
 CALDWELL, JANETTE, Note on Display of Nuthatch in winter, 213.
 CAMPBELL, BRUCE, Notes on some Monmouthshire and East Glamorgan birds, 1943-1945, 322; Notes on Raven nesting in a rookery, 340; Nest sanitation and egg-shell disposal of Chough, 340; Food of Bullfinch, 341; Nesting of Willow-Tit in Glamorgan, 341; Varieties of British Robin, 375.
 CAMPBELL, JAMES W., Note on Waxwing in Sutherland, 177; The food of the Wigeon and Brent Goose, 194, 226; Notes on the Food of some British Birds, 371.
cannabina, *Carduelis c.*, see Linnet.
canorus, *Cuculus c.*, see Cuckoo.
canus, *Larus c.*, see Gull, Common.
carbo, *Phalacrocorax c.*, see Cormorant.
 CASSIDY, JOHN, Note on Tawny Owl nesting in factory wall, 155.
 Chaffinch, Courtship display of, 23; Unusual forms of song, 23, 24; Early nesting of, in 1945, 62; hovering, 63; Half-roof on nest of, 213; Song with terminal click in England, 244; Nests of, high in trees, 277; wading and probing for food, 314; Rhythmic calling on migration, 374.

CHANDLER, K. R., Notes on "Injury-signing" of Wood-Pigeons, 92; Jackdaws visiting nest holes in autumn, 116.
 CHAPPELL, BERTRAM M. A., Notes on Courtship-feeding of Blackbird, 215; Siting of Crested Larks' nests, 278; Sky-Larks nesting in artificial depressions, 278; Letter on Association of three Rooks at nest, 352.
 Chiffchaff, Effect of snow on nesting of, 86; in Kent in winter, 222; Pre-coital display of, 246.
chloris, *Chloris ch.*, see Greenfinch.
chloropus, *Gallinula ch.*, see Moorhen.
 Chough, Nest sanitation and egg-shell disposal of, 340.
chrysaëtus, *Aquila ch.*, see Eagle, Golden.
cinerea, *Ardea c.*, see Heron.
 —, *Motacilla c.*, see Wagtail, Grey.
cirlus, *Emberiza c.*, see Bunting, Cirl.
citrinella, *Emberiza c.*, see Bunting, Yellow.
 CLANCEY, P. A., Notes on Iris and bill coloration of Hedge-Sparrow 179; Coloration of soft parts of Crested Tit, 214; Party of Ospreys in Lanarkshire, 218; Golden Oriole in Lancashire in June, 276; Varieties of the British Robin, 281; The racial status of Hedge-Sparrows from Northumberland, 376; Letter on Crested Tits, 384.
 Clutch Size, Variations in, 337.
coburni, *Turdus musicus*, see Red-wing, Iceland.
coccothraustes, *Coccothraustes c.*, see Hawfinch.
 COCKROFT, SYDNEY, EDWARDS, GEORGE, HOSKING, ERIC, and WATSON, EDWARD, Note on Lapwing's clutch of six eggs, 158.
cælebs, *Fringilla c.*, see Chaffinch.
 COHEN, EDWIN, Notes on Young Red-backed Shrike returning to nest, 246; Unrecorded note of Green Woodpecker, 248.
colchicus, *Phasianus*, see Pheasant.
 Cold spell in January, 1945, Effects of, 32.
 COLLING, A. W. and BROWN, E. B., The breeding of Marsh and Montagu's Harriers in North Wales in 1945, 233.
collurio, *Lanius c.*, see Shrike, Red-backed.

- collybita*, *Phylloscopus c.*, see Chiffchaff.
- COLTART, F., Notes on Display of Nuthatch in winter, 116; Kestrel capturing a bird in full flight, 121.
- COLYER, W. L., Notes on Redshanks rearing two broods, 31; Sunbathing of Long-tailed Tit, 245.
- communis*, *Dryobates minor*, see Woodpecker, Lesser Spotted.
- communis*, *Sylvia c.*, see Whitethroat.
- CONDER, P. J., Note on Rhythmical calling of Chaffinches on migration, 374.
- COOKE, R., Black Terns breeding in Sussex, 71.
- corax*, *Corvus c.*, see Raven.
- Cormorant, Display flight of, 157.
- CORNISH, A. V., Note on Gannet feeding on large fish, 345.
- , CRASKE, H. J., O'DOGHERTY, B. J. B., HENDY, E. W. and JOYCE, H. S., Note on Yellowshank in Devon, 346.
- Cornwall, A Survey of the Status of Birds breeding in, and Scilly since 1906, 3, 34.
- corone*, *Corvus c.*, see Crow, Carrion.
- coturnix*, *Coturnix c.*, see Quail.
- Courtship-feeding of Willow-Warbler, 25, 280; of Blackbird, 26, 215; of Mistle-Thrush, 88, 179; in thrushes and warblers, 88; of Hoopoe, 119; of Black Kite, 121; of Greenfinch, 212, 314; of Linnet, 244; of Willow-Tit, 245.
- CRASKE, H. J.. see CORNISH, A. V.
- Creeper, Tree-, Early nesting of, in 1945, 347.
- cristata*, *Galerida*, see Lark, Crested.
- Crow, Carrion-, Early nesting of, in 1945, 62.
- Cuckoo, Display of, 248.
- Curlew nesting in Buckinghamshire, 249.
- , Stone-, using autumn-type display in spring, 252.
- curonicus*, *Charadrius dubius*, see Plover, Little Ringed.
- cygnus*, *Cygnus*, see Swan, Whooper.
- DALLAS, J. E. S., see FISHER, JAMES.
- DAVIS, H. H., Note on American Wigeon in Somerset, 219.
- , —, and SCOTT, PETER, Lesser White-fronted Geese on the Severn, 77.
- Display of Chaffinch, 23; of Willow-Warbler, 24, 25; of Nuthatch in winter, 116, 213; of Spotted Flycatcher, 117; threat, used by Willow-Warbler to artificially produced Cuckoo-note, 118; of Bee-eater, 154; flight of Cormorant, 157; of Mute Swan, 182; pre-coitional, of Chiffchaff, 246; of Song-Thrush, 247; of Cuckoo, 248; autumn-type, used by Stone-Curlew in spring, 252; of Blackbird, 280; of Sand-Martin, 282; ground, of Kentish Plover, 286; of Blackcock, 287; flight of Marsh Tit, 316; flight of Willow-Warbler, 375; of Hedge-Sparrow, 376.
- DOBSON, RODERICK and LOCKLEY, R. M., Gannets breeding in the Channel Islands: two new colonies, 309.
- domesticus*, *Passer d.*, see Sparrow, House-.
- DONALDSON, R. PRESTON, see Low, G. CARMICHAEL.
- Dotterel in Northamptonshire, 93; in Trent Valley, 148.
- dougallii*, *Sterna d.*, see Tern, Roseate.
- DOUGLAS, GORDON, Note on Lapwing's nest with six eggs, 320.
- DOUGLAS-HOME, H., Notes on Marsh Tits in Berwickshire, 177; Turtle-Dove nesting in Scotland, 283.
- Dove, Eastern Turtle-, in Norfolk, 184.
- , Rock-, All the year breeding of the, 136.
- , Turtle-, Wing-clapping of, 29, 284; in Orkney in summer, 30; Notes of, 123; Wintering in Devonshire, 249; in Aberdeenshire, 254; Nesting in Scotland, 283; Early nesting of, in 1945, 347.
- Doves, Some remarks on Sex behaviour of, 146.
- dresseri*, *Parus palustris*, see Tit, Marsh-.
- Duck, Ferruginous, in Norfolk, 91; in Northamptonshire, 183.
- , Long-tailed, Actions of, under water, 283.
- , Tufted, "Injury-feigning" of, 377.
- Dunlin, Food-washing of, 250.
- DUNT, R. H., Note on courtship-feeding and display flight of Willow-Warbler, 25.

- Eagle, Golden, running, 344.
 Early nesting in 1945, 62 ; in 1945 and 1946 (also 1943), 346 ; correction, 379.
- EDWARDS, GEORGE, see COCKROFT, SYDNEY.
- ELLIS, J. C. S., Notes on the food of the Kestrel, 113 ; Note on Little Owl's method of taking Pheasant chick by daylight, 217 ; Food-washing habit of waders, 378.
- ELLISON, NORMAN F. and JOHNSTON, TOM L., Note on "Injury-feigning" of Oyster-catcher, 60.
- ENGLAND, M. D., Note on Unrecorded posture of Great Tit, 341.
- epops*, *Upupa e.*, see Hoopoe.
- ericetorum*, *Turdus e.*, see Thrush, Song-.
- erythropus*, *Anser*, see Goose, Lesser White-fronted.
- , *Tringa*, see Redshank, Spotted.
- falcinellus*, *Plegadis f.*, see Ibis, Glossy.
- Falcon, Peregrine, Aggressive behaviour of, 180 ; Unusual hunting behaviour of, 318.
- ferina*, *Aythya*, see Pochard.
- Fieldfares, Early, 63 ; in Derbyshire in June, 342 ; late in Lincolnshire, 348.
- Finches and other Passerines hovering, 63.
- FISHER, JAMES, NEWTON, R. G., SUMMERFIELD, A. R. and DALLAS, J. E. S., Note on First breeding of Fulmar Petrel in North Wales, 28.
- FITTER, R. S. R., Report of the Black Redstart inquiry for 1945, 207.
- flava*, *Motacilla*, Variant, in Sussex, 32.
- flavipes*, *Tringa*, see Yellowshank.
- Flycatcher, Pied, nesting in North Derbyshire, 317 ; breeding in Ayrshire, 342.
- , Red-breasted, in Lancashire, 117.
- , Spotted, Display of, 117 ; Irregular laying of, 279 ; Young returning to nest, 313 ; feeding first brood while incubating second clutch of eggs, 342.
- Food of the Wigeon and Brent Goose, 194, 226 ; of some British Birds, 371.
- Food-washing of Curlew-Sandpiper, 184 ; of Whimbrel and Dunlin, 249 ; of waders, 377.
- frugilegus*, *Corvus f.*, see Rook.
- fulicarius*, *Phalaropus*, see Phalarope, Grey.
- fuligula*, *Aythya*, see Duck, Tufted.
- fulvus*, *Gyps f.*, see Vulture, Griffon.
- fuscicollis*, *Calidris*, see Sandpiper, Bonaparte's.
- GADE, F. W., Note on Pratincole on Lundy, 93.
- Gannets at some distance from the sea, 221 ; Winter distribution of, in the Eastern Mediterranean, 256 ; breeding in the Channel Islands : two new colonies, 309 ; feeding on large fish, 345 ; in Warwickshire in June, 348.
- Garganey breeding in Nottinghamshire, 31.
- GARRETT, V. R., Note on Snowy Owl in Cornwall, 216.
- garrulus*, *Bombycilla g.*, see Waxwing.
- , *Coracias*, see Roller.
- gengleri*, *Fringilla cælebs*, see Chaffinch.
- GENT, C. J., Note on Incubation and fledging period of Olivaceous Warbler, 118.
- gentilis*, *Accipiter g.*, see Goshawk.
- GIBB, J. A., Note on Egg-laying intervals of Shag, 220 ; Singing of Birds on Malta and Gozo, 354.
- gibraltaricensis*, *Phoenicurus ochruros*, see Redstart, Black.
- GILBERT, H. A., Note on Gatherings of Ravens in Breconshire, 52.
- GILLHAM, ERIC, Note on Woodchat Shrike in Kent, 279.
- glacialis*, *Fulmarus g.*, see Petrel, Fulmar.
- Glamorgan, East, Notes on some birds in, 322.
- glareola*, *Tringa*, see Sandpiper, Wood-.
- GLEGG, WILLIAM E., Notes on Earliest known British occurrence of North Atlantic Shearwater, 56 ; Great Spotted Woodpecker killed by Grey Squirrel, 90 ; Letter on share of sexes in incubation in Kentish Plover, 224 ; Note on Overlooked record of Kentish Plover in Middlesex, 319.
- GODDARD, F. J., Note on Snowy Owl in Hampshire, 216.

- Godwit, Bar-tailed, Movements of, on west coast of Scotland, 284; on Morecambe Bay, 379.
 —, Black-tailed, in London, 30; in Hampshire in winter, 192; on the Severn, 192.
 Goldcrest, Song-period of, 215, 318.
 Goldfinch, Early nesting of, in 1945, 346.
 GOODWIN, DEREK, Notes on Courtship feeding of Hoopoe, 119; Feeding of female Black Kite by male, 121; Notes of Turtle Dove, 123; Some remarks on Sex behaviour of Doves, 146.
 Goose, Brent, Food of the, 194, 226.
 —, Lesser White-fronted, on the Severn, 77; Photographed by SCOTT, PETER and MAXWELL, GAVIN, 80.
 —, Pink-footed, in Co. Wexford, 182.
 GORDON, SETON, Note on Golden Eagle running, 344.
 Goshawk in Nottinghamshire, 155.
grællsii, *Larus fuscus*, see Gull, Lesser Black-backed.
gravis, *Puffinus*, see Shearwater Great.
 Grebe, Black-necked, Early nesting of, in 1945, 62; breeding in Angus, 123.
 Greenfinch's nest, Observations at a, 84; Young returning to nest, 152, 313; Courtship feeding of, 212, 314; Song of female, 244; adapting Chaffinch's nest, 276.
 Greenshank "up-ending," 158.
 GREGORY, LESLIE, Note on "Anting" of Starling, 374.
 GREGORY, T. C., Note on Marsh-Harrier preying on Green Woodpecker and Water-Rail, 181.
 GRIFFITH, WALTER, Note on Male Kestrel passing prey to female, 376.
 GROVES, ROBERT E., Letter on Robin feeding young Song-Thrushes, 256.
 Guillemot, Brünnich's, Probable, in Co. Dublin, 190.
 Gull, Black-headed, Colonies overlooked in 1938 Survey, 224; Feeding habits of, 285; "Up-ending," 348.
 —, Common, nesting on birch trees, 61; in second year holding territory, 126.
 GULL, Glaucous, in N.E. Scotland, 253.
 —, Herring-, nesting in Cheshire, 320.
 —, Lesser Black-backed, breeding in Nottinghamshire, 31; wintering in Solway Firth area, 127.
 —, Little, Notes on the breeding of the, 14; Behaviour of, 61; in Aberdeenshire, 126; following plough, 190.
 GUNSTON, DAVID, Note on Young Blackbirds returning to nest, 246.

haliaeetus, *Pandion h.*, see Osprey.
 HALL, A. H., Note on Song-period of Goldcrest, 215.
 HAMOND, C. E., Note on Arctic Redpolls in Norfolk, 151.
 HARBER, D. D., Notes on Marsh-Harrier in Sussex, 27; Turnstones using elevated perches, 157.
 HARDY, ERIC, Letter on The winter distribution of the Gannet in the Eastern Mediterranean, 256.
 Harrier, Marsh-, in Suffolk, Sussex and Yorkshire, 27; in South of England in breeding season, 121; preying on Green Woodpecker and Water-Rail, 181; breeding in North Wales in 1945, 233.
 —, Montagu's, in Herefordshire, 192; breeding in North Wales in 1945, 233.
 HARRISON, JAMES M., Notes on Continental Great Tit in Kent, 153; Little Ringed Plover in Kent, 251; Sunbathing by birds, 276; Letter on The Birds of Kent, 384.
 HARTHAN, A. J., Note on Quail calling in flight, 288.
 HARTLEY, P. H. T., Note on Unusual forms of Chaffinch song, 23; The Song of the White Wagtail in winter quarters, 44; Notes on the breeding biology of the Crested Lark, 142; Display of Bee-eater, 154; Display flight of Cormorant, 157.
 HARVEY, BERNARD F., Note on Display of Song-Thrush, 247.
 HARWOOD, N., Note on Fieldfare in Derbyshire in June, 342.
 Hatching of eggs, Delayed, 159.

- HAVERSCHMIDT, Fr., Notes on the breeding of the Little Gull, 14; Share of sexes in incubation in Kentish Plover, 58; "Injury-feigning" of Oyster-catcher, 59; Food-washing habit of Curlew-Sandpiper, 184; Notes on Nest-sites of the Oyster-catcher and the Long-Eared Owl as a hole breeder, 334.
- Hawfinch as prey of Sparrow-Hawk, 64, 191; Early nesting, in 1945, 346.
- Hawk, Sparrow-, Hawfinch as prey of, 64, 191; in Outer Hebrides, 282.
- HENDERSON, MARY, Note on Gannets at some distance from the sea, 221.
- HENDY, E. W., see CORNISH, A. V.
- HEPWORTH, N. M., Note on Observations at a Greenfinch's nest, 84.
- Heron, Bill-colour of, in breeding-season, 128; Index of Heron Population, 1945, 201; Balance of population in the, 204.
- hiaticula*, *Charadrius h.*, see Plover, Ringed.
- hibernicus*, *Parus ater*, see Tit, Irish Coal.
- HICKS, N. C., Note on young Willow-Warbler returning to nest, 178.
- HILL, W. C. OSMAN, Note on Black Stork in Scotland, 344.
- himantopus*, *Himantopus h.*, see Stilt, Black-winged.
- HINDE, ROBERT A., Note on Birds on Rockall, 1945, 52.
- hirundo*, *Sterna h.*, see Tern, Common.
- HOFFMAN, H. J., Note on Evidence of part played by male Red-backed Shrike in site-selection, 317.
- HÖHN, E. O., PARRINDER, E. R., and PEDLER, E. G., The Little Ringed Plover in the London area in 1945, 12.
- HOLLOM, P. A. D., Note on Rustic Bunting on Fair Isle, 278.
- HOLMES, P. F., Note on White Wagtail roost, 245.
- HOLROYDE, F. J., Note on Kestrel taking Redwing, 282.
- Hoopoe, Courtship feeding of, 119; in Gloucestershire and in County of London, 223.
- hornemannii*, *Carduelis*, see Redpoll, Arctic.
- HOSKING, ERIC, see COCKROFT, SYDNEY.
- Hovering, Finches and other Passerines, 63.
- HUNT, O. D., Note on Raven nesting in a herony, 340.
- HYATT, J. H., Note on Raven's nest in October, 83.
- hyemalis*, *Clangula*, see Duck, Long-tailed.
- hyperboreus*, *Larus*, see Gull, Glaucous.
- hypoleuca*, *Muscicapa h.*, see Flycatcher, Pied.
- Ibis, Glossy, in Norfolk, 91; in Co. Wexford, 182.
- icterina*, *Hippolais*, see Warbler, Icterine, 148.
- Incubation-periods of birds. Some criticisms on the recording of, 49; Recording of, and fledging periods, 66; of Olivaceous Warbler, 118.
- "Injury-feigning" of Oyster-catcher, 59, 60; of Wood-Pigeon, 92; of Nuthatch, 117, 214; of Blackbird, 248; of Tufted Duck, 377.
- interpres*, *Arenaria i.*, see Turnstone.
- Irish Sea, Spring migration across the, 83.
- Jackdaw, Early nesting of, in 1945, 62; visiting nest holes in autumn, 116; carrying young thrush in claw, 149; Nest with ten eggs, 254.
- JEANS, BERNARD, Note on unusual behaviour of Green Sandpiper, 124.
- JOHNSON-FERGUSON, BRIAN, Note on Green Woodpecker in Dumfriesshire, 344.
- JOHNSTON, TOM L., see ELLISON, NORMAN F.
- JOLLEY, A. E., Note on Kentish Plovers on Leicestershire-Rutland border, 187.
- JOY, N. H., Note on Emigration of Swifts during July, 54.
- JOYCE, H. S., see CORNISH, A. V.
- Juvenile birds, Do, survive less well than adults ?, 258, 320.

- KENNEDY, P. G., Obituary of MOFFAT, C. B., 81; Note on Probable Brünnich's Guillemot in Co. Dublin, 190.
- KENT, Letter on Birds of, 384.
- KERLEY, H. S., Note on Roller in London County in January, 119.
- Kestrel, Notes on the food of the, 113; capturing a bird in full flight, 121, 217; Nocturnal hovering of 217; taking Redwing, 282; Male passing prey to female, 376.
- , Lesser, Probable, in Sussex, 158.
- KIMBREY, I., Note on Aggressive behaviour of Blue Tits in winter, 86.
- Kite, Black, Feeding of female, by male, 121.
- Kittiwake breeding in Scilly, 190; nesting in Norfolk, 379.
- kleinschmidti*, *Parus atricapillus*, see Tit, Willow-.
- kuhlii*, *Puffinus*, see Shearwater, North Atlantic.
- LACK, DAVID, Note on Sedge and Reed-Warbler collecting food outside their territories, 87; Clutch and brood size in the Robin, 98, 130; Balance of population in the Heron, 204; Do juvenile birds survive less well than adults ?, 258; Note on Blackcock display, 287.
- , —, see PARKHURST, R.
- lagopus*, *Buteo l.*, see Buzzard, Rough-legged.
- Lancashire, New work on the Birds of, 191.
- lapponica*, *Limosa l.*, see Godwit, Bar-tailed.
- Lapwing, Chipping-period of eggs, 124; Clutch of six eggs, 158; Nest with six eggs, 320.
- Lark, Crested, Notes on the breeding biology of the, 142; Siting of nests, 278.
- , Sky-, Large clutches of, 53; nesting in artificial depressions, 278.
- , Wood-, Nesting of, in North Yorkshire, 85.
- LEACH, E. P., Recovery of Marked Birds, 365.
- LEE, R. W. M., Notes on Little Ringed Plover in Warwickshire, 57; Wood-Sandpiper and other waders in Warwickshire, 285.
- LEES, I. J. FERGUSON, Notes on Kentish Plovers in Northamptonshire, 187; Half-roof on nest of Chaffinch, 213; Song of female Greenfinch, 244; Greenfinch adapting Chaffinch's nest, 276; Irregular laying of Spotted Flycatcher, 279; Sparrow-Hawk in Outer Hebrides, 282.
- , —, see BURTON, R. E.
- LEES, JOHN, All the year breeding of the Rock-Dove, 136.
- leucopterus*, *Chlidonias*, see Tern.
- White-winged Black.
- leucorodia*, *Platalea l.*, see Spoonbill.
- LEWIS, STANLEY, Note on Sandwich Tern in Somerset in December, 93.
- limosa*, *Limosa l.*, see Godwit, Black-tailed.
- Linnet, Cock, feeding hen during incubation, 244; Young returning to nest, 374.
- livia*, *Columba l.*, see Dove, Rock-
- LLOYD, SYLVIA, Notes on Mistle-Thrushes nesting in Inner London, 87; Corn-Bunting in Scilly, 177.
- LOCKLEY, R. M., see DOBSON, RODERICK.
- lomria*, *Uria l.*, see Guillemot, Brünnich's.
- London, Birds of Inner, 168.
- LORD, J. and AINSWORTH, G. H., Note on Marsh-Harrier in Yorkshire, 27.
- LOW, G. CARMICHAEL, Note on Bewick's Swans in London, 219.
- , —, and DONALDSON, R. PRESTON, Note on Black-tailed Godwits in London, 30.
- , —, and OOSTVEEN, M. S. VAN, Birds of Inner London, 168.
- MCLEAN, A. S. and RAINES, R. J., Note on Black-winged Stilts in Cambridgeshire, 189.
- MACNAE, W., Note on Marsh-Harrier in South of England in breeding season, 121.
- macrura*, *Sterna*, see Tern, Arctic,
- McWILLIAM, J. M., Note on increase of Siskins in Dumfriesshire, 53.
- magna*, *Galerida cristata*, see Lark, Crested.
- Magpie, "Anting" by, 313; Early nesting of, in 1945, 346; Sexual behaviour of, in assembly, 347; Large clutch of eggs, 374.

major, *Parus m.*, see Tit, Continental Great.
 ——, *Upupa epops*, see Hoopoe.
 Mallard sharing nest, 348.
 Malta and Gozo, Singing of Birds on, 354.
 MANNING, A., Note on Male Blackbird attempting to feed female, 26.
 MANSON-BAHR, SIR PHILIP, Letter on Delayed hatching of eggs, 159.
maritima, *Calidris m.*, see Sandpiper, Purple.
 Marked Birds, Recovery of, 365.
 MARTIN, CYRIL E., Note on Water-Rail washing food, 320.
 Martin, House-, driving off House-Sparrows from their nest, 54.
 ——, Sand-, Display of, 282.
 MASON, A. G., Note on Ruffs in Co. Kildare, 124.
 MAY, D. J., Letter on Robin feeding young Song-Thrushes, 96; Notes on Juvenile Robin singing in June, 119; Display of Hedge-Sparrow, 376; "Injury-feigning" of Tufted Duck, 377.
 MAYNARD, VERA, Note on Young birds returning to nest, 313.
 MEAD, JOHN N., Note on Cock Linnet feeding hen during incubation, 244.
media, *Capella*, see Snipe, Great.
 MEES, G. F., Note on Courtship feeding of Willow-Warbler, 280.
megarhyncha, *Luscinia m.*, see Nightingale.
melanocephala, *Emberiza*, see Bunting, Black-headed.
melophilus, *Erithacus rubecula*, see Robin.
merula, *Turdus m.*, see Blackbird.
 Migrants, Unusual combination of, in London area, 284.
 MILNE-REDHEAD, M. O., Note on Unusual behaviour of Water-Rail, 253.
minutus, *Ixobrychus m.*, see Bittern, Little.
 ——, *Larus*, see Gull, Little.
mitratus, *Parus cristatus*, see Tit, Crested.
 MOFFAT, CHARLES BETHUNE, Obituary of, 81.
 MONEY-COUTTS, H., Note on Green-shank "up-ending", 158.
 Monmouthshire Birds, Notes on some, 322.
montanus, *Passer m.*, see Sparrow, Tree-.

Moorhen breeding in winter, 224; attacking rat, 254.
 MOREAU, R. E., The recording of Incubation and Fledging Periods, 66.
morinellus, *Eudromias*, see Dotterel.
 MORRIS, R., Note on Food-washing habit of waders, 378.
Motacilla flava, Variant in Sussex, 32.
musicus, *Turdus m.*, see Redwing.

naumanni, *Falco*, see Kestrel, Lesser.
nebularia, *Tringa*, see Greenshank.
nesa, *Pyrrhula p.*, see Bullfinch.
 Nesting success data, Some, 337.
 NEWTON, R. G., see FISHER, JAMES.
newtoni, *Parus major*, see Tit, Great.
 NICHOLSON, E. M., Some further notes from the North Atlantic, 265.
niger, *Chlidonias n.*, see Tern, Black.
 Nightingale, Early nesting of, in 1945, 63.
nigra, *Ciconia*, see Stork, Black.
nigriceps, *Podiceps n.*, see Grebe, Black-necked.
nilotica, *Gelochelidon*, see Tern, Gull-billed, 149.
ninus, *Accipiter n.*, see Hawk, Sparrow-.
 NORRIS, C. A., Note on Pochard breeding in Warwickshire, 282.
 North Atlantic, Some further notes from the, 265.
 Nuthatch, Display of, in winter, 116, 213; "Injury-feigning" of, 117, 214; feeding nestling Starlings, 316; Early nesting of, in 1945 and 1946, 347, 379.
nyroca, *Aythya n.*, see Duck, Ferruginous.

 OAKES, CLIFFORD, Note on Red-breasted Flycatcher in Lancashire, 117.
obscurus, *Parus cæruleus*, see Tit, Blue.
occidentalis, *Hæmatopus ostralegus*.
 see Oyster-catcher.
 ——, *Prunella modularis*, see Sparrow, Hedge-.
ochropus, *Tringa*, see Sandpiper, Green.
 O'DOGHERTY, B. J. B., see CORNISH, A. V.
aedicnemus, *Burhinus a.*, see Curlew, Stone-.

- OLIVIER, GEORGES, Note on Note of Woodcock, 124.
- olor*, *Cygnus*, see Swan, Mute.
- ONSLOW, G. HUGHES, Notes on Ravens nesting in a heronry, 212; Movements of Bar-tailed Godwits on West Coast of Scotland, 284; Pied Flycatcher breeding in Ayrshire, 342.
- OOSTVEEN, M. S. VAN, see Low, G. CARMICHAEL.
- orientalis*, *Streptopelia o.*, see Dove, Eastern Turtle-.
- Oriole, Golden, in Yorkshire, Hampshire and Dorset, 127; in Lancashire in June, 276.
- oriolus*, *Oriolus o.*, see Oriole, Golden.
- Osprey on Loch Ness, 64; in Lanarkshire, 218; in Yorkshire, 348.
- ostrealegus*, *Hæmatopus*, see Oystercatcher.
- otus*, *Asio o.*, see Owl, Long-eared.
- Owl, Barn-, roosting in conifer, 90, 180.
- , Little, Method of taking Pheasant chick by daylight, 217.
- , Long-eared, as a hole breeder, 334.
- , Snowy, in Kirkcudbrightshire, 120; in Cornwall and Hampshire, 216.
- , Tawny, nesting in factory wall, 155.
- Oyster-catcher, "Injury-feigning" of 59, 60; marked with coloured rings, 288; Notes on nest-sites of, 334.
- pallida*, *Hippolais p.*, see Warbler, Olivaceous, 118.
- palumbus*, *Columba p.*, see Pigeon, Wood-.
- palustris*, *Acrocephalus*, see Warbler, Marsh-.
- parasiticus*, *Stercorarius*, see Skua, Arctic.
- PARDOE, PETER, Note on Marsh-Harrier in Suffolk, 27.
- Parent birds probing amongst brood in nest, 158, 255.
- PARKHURST, E. H., Note on Yellow Bunting and Tree-Pipit laying in same nest, 314.
- PARKHURST, R., and LACK, DAVID, The Clutch-size of the Yellowhammer, 358.
- PARRINDER, E. R., see HöHN, E. O.
- parva*, *Muscicapa p.*, see Flycatcher, Red-breasted.
- Passerine birds, Occasional hovering by, 222.
- PEARCE, E. W., Note on Redstart nesting in Co. Kerry, 318.
- PEDLER, E. G., see HöHN, E. O.
- penelope*, *Anas*, see Wigeon.
- PENNIE, IAN D., Note on Common Gulls nesting on birch trees, 61.
- peregrinus*, *Falco p.*, see Falcon, Peregrine.
- PERRY, RICHARD, Note on Waxwings in Inverness-shire, 177.
- perspicillata*, *Melanitta*, see Scoter, Surf.
- Petrel, Fulmar, First breeding of, in North Wales, 28.
- Phalarope, Grey, in Somerset, 94.
- Pheasant's nest with thirty-one eggs, 348.
- phænicurus*, *Phænicurus ph.*, see Redstart.
- phæopus*, *Numenius*, see Whimbrel.
- pica*, *Pica p.*, see Magpie.
- Pigeon, Wood-, "Injury-feigning" of, 92.
- pilaris*, *Turdus*, see Fieldfare.
- Pintail. Numbers of, in Essex and Somerset, 223.
- Pipit, Meadow-, Large clutches of, 53.
- , Tree-, and Yellow Bunting laying in same nest, 314.
- platyrhyncha*, *Anas p.*, see Mallard.
- Plover, Golden, Flocking of, 58.
- , Kentish, Share of sexes in incubation in, 58, 224; in Northamptonshire, Northumberland and on Leicestershire-Rutland border, 187; Ground display of, 286; Overlooked record of, in Middlesex, 319.
- , Little Ringed, in the London area in 1945, 12; in Warwickshire, 57; in Kent, 251.
- , Ringed, Female, performing scrape-ceremony, 251.
- pluvius*, *Picus viridis*, see Wood-pecker, Green.
- Pochard breeding in Warwickshire, 282.
- pomarinus*, *Stercorarius*, see Skua, Pomatorhinus.
- POWELL, H., Note on Nuthatch feeding nestling Starlings, 316.
- pratensis*, *Anthus*, see Pipit, Meadow-.
- pratincola*, *Glareola*, see Pratincole.
- Pratincole on Lundy, 93.
- PRYOR, G. RONALD, Note on Pied Flycatcher nesting in North Derbyshire, 317.
- pugnax*, *Philomachus*, see Ruff.

PULLEN, N. D., Further notes on the breeding of Blue Tits, 162.
pygargus, *Circus*, see Harrier, Montagu's.
pyrrhocorax, *Pyrrhocorax p.*, see Chough.

Quail breeding in Wiltshire, 128; calling in flight, 288.
querquedula, *Anas*, see Garganey.
 QUICK, Miss H. M., see RYVES, Lt.-COL. B. H.

Rail, Water-, Marsh-Harrier preying on, 181; Unusual behaviour of, 253; washing food, 320.
 RAINES, R. J., Notes on Common Tern, Lesser Black-backed Gull and Garganey breeding in Nottinghamshire, 31; Rare migrants in the Trent Valley, Nottinghamshire, 1945, 148; Goshawks in Nottinghamshire, 155.
 —, see MCLEAN, A. S.
 Raven, Gatherings of, in Breconshire, 52; Nest in October, 83; nesting in a herony, 212, 340; nesting in a rookery, 340.
 Redpoll, Arctic, in Northumberland and Norfolk, 150.
 Redshanks rearing two broods, 31; Feeding habits of, 285; "Up-ending" by, 319.
 —, Spotted, in Co. Mayo, 92; in Sussex in winter, 186; "Up-ending" by, 319.
 Redstart, Early nesting of, in 1945, 63, 347; hovering, 63; nesting in Co. Kerry, 318.
 —, Black, Breeding of, in Britain: a century-old record, 110; Result of the Inquiry for 1945, 207.
 Redwing, Juvenile, in Kent in July, 32; Kestrel taking, 282.
 —, Iceland, in Lancashire, 89.

Reviews:—

Somerset Archæol. and Nat. Hist. Soc.: Ornithological Section. Report on Somerset Birds, 1944, 95.
 Ornithological Record for Derbyshire, 1944, 95.

Reviews (*cont.*):—

British Trust for Ornithology: Eleventh Report for the year 1944, issued 24th September, 1945, 95.
 Jørgensen and Blackburne: Glossarium Europæ Avium, 255.
 Higham: Birds in Colour, 349.
 Hickey: A Guide to Bird-Watching, 349.
 Smith: How to study Birds, 350.
 Griscom: Modern Bird Study, 351.
 Birmingham and District Bird Club: Twelfth Annual Report on the Birds of Warwickshire, Worcestershire and South Staffordshire, 1945, 379.
 Report of the Cambridge Bird Club, 1945, 380.
 Cornwall Bird Watching and Preservation Society: Fifteenth Annual Report, 1945, 381.
 Eighteenth Report of the Devon Bird-Watching and Preservation Society, 1945, 381.
 Report on Dorset Birds, 1944, 382.
 Report on Birds observed in Hertfordshire in 1945, 383.
 Leicestershire and Rutland County Report of Wild Birds for 1945, 383.
 London Bird Report for 1945, 383.
 REYNOLDS, E., Note on "Anting" by Magpies, 313.
 REYNOLDS, R. A. W., Variations in clutch size and some nesting success data, 337.
 RICHARDS, B. A., Note on Turnstones using elevated perches, 30.
ridibundus, *Larus r.*, see Gull, Black-headed.
 RINTOUL, LEONORA JEFFREY, see BAXTER, EVELYN V.
riparia, *Riparia r.*, see Martin, Sand.
 RIVIÈRE, B. B., Notes on Eastern Turtle-Dove in Norfolk, 184; Kittiwake nesting in Norfolk, 379.
 ROBERTS, E. L., Notes on Nocturnal hovering of Kestrel, 217; Unusual hunting behaviour of Peregrine Falcon, 318.

- Robin feeding young Song-Thrushes, 96, 256; Clutch and brood size in the, 98, 130; Juvenile singing in June, 119; Varieties of the British, 281, 375; Early nesting of, in 1946, 347.
- ROBINSON, M. G., Notes on Wood-Sandpiper in Westmorland, 57; Siskins in Westmorland in summer, 150.
- Rockall, Birds on, 1945, 52.
- Roller in London County in January, 119.
- Rook, Courtship of, 347; Association of three, at nest, 352.
- ROPER, R. M., Note on Little Gull following plough, 190.
- rosaceus*, *Aegithalos caudatus*, see Tit, Long-tailed.
- roseus*, *Pastor*, see Starling, Rose-coloured.
- rubecula*, *Erithacus*, see Robin.
- Ruffs in Co. Kildare, 124.
- rustica*, *Emberiza*, see Bunting, Rustic.
- , *Hirundo r.*, see Swallow.
- rusticola*, *Scolopax r.*, see Woodcock.
- RUTTER, E. M., Note on Nesting of Wood-Lark in N. Yorkshire, 85.
- RUTTLEDGE, ROBERT F., Notes on Spotted Redshanks in Co. Mayo, 92; Spoonbill in Co. Galway, 122; Chipping-period of Lapwing's eggs, 124; Female Ringed Plover performing scrape-ceremony, 251; Song-period of Goldcrest, 318; Roosting habits of the Irish Coal-Tit, with some observations on other habits, 326.
- , —, see BARLEE, JOHN.
- RYALL, R. H., see BISPHAM, T.
- RYVES, Lt.-Col. B. H., Some criticisms on the recording of incubation-periods of birds, 49; Note on Young birds returning to nest, 152; Letter on Parent birds probing amongst brood in nest, 158; Notes on Courtship-feeding of Mistle-Thrush, 179; Chaffinch's nests high in trees, 247; Blackbird's clutch of two eggs, 375.
- , —, and QUICK, Miss H. M., A Survey of the Status of birds breeding in Cornwall and Scilly since 1906, 3, 34.
- Sandpiper, Bonaparte's, seen in Kent, 186.
- , Curlew-, Food-washing habit of, 184.
- , Green, Unusual behaviour of, 124.
- , Purple, using elevated perches, 222.
- , Wood-, feeding on open shore, 57; in Westmorland, 57; and other waders in Warwickshire, 285.
- sandvicensis*, *Sterna s.*, see Tern, Sandwich.
- scandiacæ*, *Nyctea*, see Owl, Snowy.
- schænobænus*, *Acrocephalus*, see Warbler, Sedge-.
- scirpaceus*, *Acrocephalus*, see Warbler, Reed-.
- Scoter, Surf, in Northumberland, 183.
- scoticus*, *Parus cristatus*, see Tit, Crested.
- SCOTT, PETER, see DAVIS, H. H.
- , —, and MAXWELL, GAVIN, Lesser White-fronted Goose, photographed by, 80.
- SEAGO, MICHAEL J., Note on Ferruginous Duck in Norfolk, 91.
- senator, *Lanius s.*, see Shrike, Woodchat.
- Shag, Egg-laying intervals of, 220.
- Shearwaters, Great, in the English Channel, 53.
- , North Atlantic, Earliest known British occurrence of, 56; Feeding behaviour of, 122.
- Shrike, Red-backed, Young, returning to nest, 246; Evidence of part played by male, in site-selection, 317.
- , Woodchat, in Kent, 279.
- sibilatrix*, *Phylloscopus*, see Warbler, Wood-.
- Singing of Birds on Malta and Gozo, 354.
- Siskins, Increase of, in Dumfries-shire, 53; in Westmorland in summer, 150.
- Skua, Arctic, in Hertfordshire, 287.
- , Great, off Kent and Essex, 61; on Norfolk-Suffolk coast, 94; off Cheshire coast, 192.
- , Pomatorhinus, off Anglesey, 192.
- skua*, *Stercorarius s.*, see Skua, Great.
- SMITH, A. H. V., Note on Food-washing habit of waders, 378.
- SMITH, L., Note on Marsh-Warbblers in Herefordshire, 25.

- SMITH, STUART, Notes on Willow-Warbler using threat-display to artificially produced Cuckoo-note, 118; Kestrel following plough, 181; Stone-Curlew using autumn-type display in spring, 252; Letter on Parent birds probing amongst brood in nest, 255.
- Snipe, Great, in Lancashire, 223.
- Song, Unusual forms of Chaffinch, 23, 24.
- SOUTHERN, H. N., Rough-legged Buzzard photographed by, 48; Three-toed Woodpecker photographed by, 176.
- SOUTHERN, JOHN B., Notes on Unusual feeding behaviour of tits, 214; Display flight of Marsh-Tit, 316; Display flight of Willow-Warbler, 375.
- Sparrow, Hedge-, Iris and bill coloration, 179; Sun-bathing of, 245; Early singing of juvenile, 344; Display of, 376; Racial status of, from Northumberland, 376.
- , House-, hovering, 63.
- , Tree-, hovering, 63; wading and probing for food, 314.
- SPENCER, K. G., Note on Kestrels capturing birds in full flight, 217.
- spermologus*, *Corvus monedula*, see Jackdaw.
- spinus*, *Carduelis*, see Siskin.
- Spoonbill in Gloucestershire, 90; in Suffolk, 94; in Co. Galway, 122; in Devon, 223.
- Spring migration across the Irish Sea, 83.
- Starling, "Anting" of, 84, 212, 374; Courtship presentation by, 116.
- , Rose-coloured, in Nottinghamshire, 313.
- STATON, J., Notes on young Willow-Warblers returning to nest, 178; Rose-coloured Starling in Nottinghamshire, 313; Chaffinch and Tree-Sparrow wading and probing for food, 314.
- Stilt, Black-winged, Breeding of, in the Netherlands in 1944 and 1945, 125; in Cambridgeshire and Lancashire, 189.
- Stint, Temminck's, and other waders in Anglesey, 185; in Northamptonshire, 250.
- Stork, Black, in Scotland, 344.
- striata*, *Muscicapa s.*, see Flycatcher, Spotted.
- Studies of some species rarely photographed: I. The Rough-legged Buzzard, 48; II. The Lesser White-fronted Goose, 80; correction, 112; III. The Cirl Bunting, 112; IV. The Marsh-Warbler, 145; V. The Three-toed Woodpecker, 176; VI. The Griffon Vulture, 275.
- SUMMERFIELD, A. R., see FISHER, JAMES.
- Sun-bathing of Long-tailed Tit and Hedge-Sparrow, 245; by birds, 276.
- Swallow, Fertility and mortality in the nest of, 73; Early nesting of, in 1946, 347.
- Swan, Bewick's, in London, 219.
- , Mute, nesting in March, 64; Coition of, on land, 182; Display of, 182.
- , Whooper, in Warwickshire, 192.
- Swifts, Emigration of, during July, 54, 191; Late in Yorkshire, 128.
- sylvatica*, *Strix aluco*, see Owl, Tawny.
- TAYLOR, DONALD A., Note on Blackbirds attempting to rear four broods from the same nest, 343.
- TAYLOR, R. F. J., Note on Ferruginous Duck in Northamptonshire, 183.
- TEBBUTT, C. F., Notes on "Anting" of Starling, 84; Great Skuas on Norfolk-Suffolk coast, 94; Food-washing habit of waders, 377.
- TEIDEMAN, S. J., Notes on House-Martins driving off House-Sparrows from their nest, 54; Courtship feeding of Greenfinch 212.
- temminckii*, *Calidris*, see Stint, Temminck's.
- TEMPERLEY, GEORGE W., Breeding of the Black Redstart in Britain: a century-old record, 110; Note on Arctic Redpolls in Northumberland, 150.
- Tern, Arctic, breeding in Scilly, 190.
- , Black, breeding in Sussex, 71; Exceptional passage of, in May, 288.
- , Common, breeding in Nottinghamshire, 31.
- , Gull-billed, in Trent Valley, 149.

- Tern, Roseate, in Trent Valley, 149.
 —, Sandwich, in Somerset in December, 93.
 —, White-winged Black, in Trent Valley, 148.
testacea, *Calidris*, see Sandpiper, Curlew-.
tetrix, *Lyrurus*, see Blaekcock.
 THOM, ALEX. S., Note on Coition of Mute Swan on land, 182.
 THOMPSON, A. J. B., Notes on American Wigeon in Gloucestershire, 220; Food-washing of Dunlin, 250.
 THOMSON, A. LANDSBOROUGH, Report of the Bird-ringing Committee: Progress for 1945, 171.
 THOMSON, W. W., see BEVEN, G.
 Thrush, Mistle-, nesting in Inner London, 87; Courtship feeding of, 88, 179.
 —, Song-, hovering, 63; Display of, 247.
 Thrushes, Courtship feeding of, 88.
 TICEHURST, N. F., Note on Purple Sandpipers using elevated perches, 222.
tinnunculus, *Falco t.*, see Kestrel.
 Tit, Bearded, Young returning to nest, 374.
 —, Blue, Aggressive behaviour of, in winter, 86; Further Notes on the breeding of, 162.
 —, Continental Great, in Kent, 153.
 —, Crested, Coloration of soft parts of, 214; Letter on, 384.
 —, Great, Sun-bathing habit of juvenile, 152; Unrecorded posture of, 341.
 —, Irish Coal-, Roosting habits of, with some observations on other habits, 326.
 —, Long-tailed, sunbathing, 245.
 —, Marsh-, in Berwickshire, 177; Display flight of, 316.
 —, Willow-, Courtship feeding of, 245; Nesting of, in Glamorgan, 341.
 Tits, Unusual feeding habits of, 224.
 TOOBY, JOHN, Note on Wing-elapping of Turtle-Dove, 29.
 TOOK, G. E., Note on "Injury-feigning" of Nuthatch, 117.
totanus, *Tringa*, see Redshank.
 TRACY, N., Some notes on the nesting of the Green Woodpecker, 19.
 Trent Valley, Nottinghamshire, Rare migrants in, in 1945, 148.
tridactyla, *Rissa t.*, see Kittiwake.
tridactylus, *Picoides*, see Wood-pecker, Three-toed.
trivialis, *Anthus t.*, see Pipit, Tree-trochilus, *Phylloscopus t.*, see Warbler, Willow-.
 TUCKER, B. W., Editorial, 1; Studies of some species rarely photographed: I. The Rough-legged Buzzard, 48; II. The Lesser White-fronted Goose, 80; III. The Cirl Bunting, 112; IV. The Marsh-Warbler, 145; V. The Three-toed Woodpecker, 176; VI. The Griffon Vulture, 275. Note on Courtship-feeding in thrushes and warblers, 88.
 TULLY, H., Note on Courtship feeding of Greenfinch, 212.
 TUNNICLIFFE, C. F., Note on Temminck's Stint and other waders in Anglesey, 185.
 TURNER, LESLIE L., Note on Little Bitterns in Lancashire, 218.
 Turnstones using elevated perches, 30, 157, 184.
turtur, *Streptopelia t.*, see Dove, Turtle-.

urbica, *Delichon u.*, see Martin, House-.

 VAN OORDT, G. J., Note on Breeding of Blaek-winged Stilts in the Netherlands in 1944 and 1945, 125.
vanellus, *Vanellus*, see Lapwing.
 Variant *Motacilla flava* in Sussex, 32.
 VERNON, E. T., Note on Snowy Owl in Kirkeudbrightshire, 120.
vidalii, *Athene noctua*, see Owl, Little.
viridanus, *Phylloscopus trochiloides*, see Warbler, Greenish.
viscivorus, *Turdus v.*, see Thrush, Mistle-.
 VOYSEY, JOHN, Note on Bonaparte's Sandpiper seen in Kent, 186.
vulgaris, *Sturnus v.*, see Starling.
 Vulture, Griffon, photographed by ATKINSON, R. and YEATES, GEORGE, 275.

 Wagtail, Grey, Young returning to nest, 152.

- Wagtail, Pied, Early nesting of, in 1945, 347.
 ——, White, Song of the, in winter quarters, 44 ; roost, 245.
WALPOLE-BOND, J., Note on Barn-Owls roosting in conifers, 180.
WALSH, ST. JOHN R. B., Note on Waxwings in Cumberland, 177.
Warbler, Garden-, Early nesting of, in 1945, 62 ; hovering, 63.
 ——, Greenish, in Shetland, 153.
 ——, Icterine, in Trent Valley, 148.
 ——, Marsh-, in Herefordshire, 25 ; photographed by YEATES, GEORGE, 145.
 ——, Olivaceous, Incubation and fledging period of, 118.
 ——, Reed-, collecting food outside their territories, 87 ; Preliminary observations on a colony of, 290 ; Early nesting of, in 1946, 347.
 ——, Sedge-, Young returning to nest, 26 ; collecting food outside their territories, 87 ; Late in Devon, 280.
 ——, Willow-, Display of, 24, 25 ; Courtship-feeding of, 25 ; Early nesting of, in 1945 and 1946, 62, 347 ; using threat-display to artificially produced Cuckoo-note, 118 ; Young returning to nest, 178 ; Note of, 215, 279 ; Courtship feeding of, 280 ; Display flight of, 375.
 ——, Wood-, Early nesting of, in 1945, 62.
Warblers, Courtship-feeding of, 88.
WATERHOUSE, M. J., Note on Chaffinch song with terminal click in England, 244.
WATERSTON, GEORGE and WATSON, ADAM, Jnr., Note on Great Spotted Woodpecker in Northeast Scotland, 155.
WATSON, ADAM, Notes on Little Gulls in Aberdeenshire, 126 ; Waxwings in Aberdeenshire, 177 ; Glaucous Gulls in N.E. Scotland, 253 ; Display of Blackbird, 280 ; Display of Sand-Martin, 282.
 ——, ——, see WATERSTON, GEORGE.
WATSON, EDWARD, see COCKROFT, SYDNEY.
WATSON, J. B., Note on Young birds returning to nest, 374.
WATSON, J. S., Note on Food-washing habit of waders, 378.
 Waxwings in Great Britain in 1944, 94 ; in Inverness-shire, Sutherland, Aberdeenshire, Cumberland and Yorkshire, 177.
WELCH, ARTHUR, Note on Iceland Redwing in Lancashire, 89.
WESTALL, P. R., Note on Glossy Ibis in Norfolk, 91.
WHEATER, J. ERIC, see BEATON, W.
WHEELER, ALWYNNE C., Note on Courtship feeding of Greenfinch, 314.
Whimbrel, Food-washing of, 249.
WHITAKER, STANTON, Letter on Parent birds probing amongst brood in nest, 158.
Whitethroat, Early nesting of, 1945, 63, 347 ; Late in Bedfordshire, 94.
Wigeon, Food of the, 194, 226.
 ——, American, in Somerset and Gloucestershire, 219.
WILFORD, E. V., Note on Display of Spotted Flycatcher, 117.
WILLIAMS, R. E., Note on Remarkable behaviour of Blackbird, 318.
WILLIAMS, T. S., Notes on Jackdaw carrying young thrush in claw, 149 ; Sun-bathing habit of juvenile Great Tits, 152.
Wood, ROBERT S., Note on Display of Cuckoo, 248.
Woodcock, Note of, 124.
Woodpecker, Great Spotted, breeding in Clackmannan, 26 ; Early nesting of, in 1945, 62 ; Drumming of, in October, 64 ; killed by Grey Squirrel, 90 ; in Northeast Scotland, 155 ; Drumming of, in September, 254 ; attacking nesting-box containing young Blue Tits, 288 ; Early nesting of, in 1945, 347.
 ——, Green, Some notes on the nesting of the, 19 ; Marsh-Harrier preying on, 181 ; Unrecorded note of, 248 ; in Dumfriesshire, 344.
 ——, Lesser Spotted, Early Drumming of, 222 ; Autumn drumming of, 254.
 ——, Three-toed, photographed by SOUTHERN, H. N., 176.
Woods, H. E., Notes on Spotted Flycatcher feeding first brood while incubating second clutch of eggs, 342 ; Large clutch of Magpie's eggs, 374.

WRIGHT, A. A., Note on Blackcap
imitating notes of Nuthatch,
247.

WRIGHT, W. A., see BISPHAM, T.

yarrellii, *Motacilla alba*. see Pied
Wagtail.

YEATES, GEORGE, Cirl Bunting
photographed by, 112; Marsh-
Warbler photographed by, 145.
—, —, see ATKINSON, R.
Yellowhammer, see Bunting, Yellow.
Yellowshank in Devon, 346.
YOUNG, G. H. E., Note on Turtle-
Dove in Orkney in summer, 30.

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