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CHIEFLY TO THE BIRDS ON THE BRITISH LIST

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EDITORS.

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BRITISH BIRDS

NUMBER I, VOL. XLVI, JANUARY, 1953.

EDITORIAL.

LAST month saw the publication by the British Ornithologists' Union of a new *Check-List of the Birds of Great Britain and Ireland*, based on the Wetmore order of classification, beginning with the divers and ending with the Passerines. This classification has now been adopted in most parts of the world; its merits were already recognized here when *The Handbook* was written, and its use is rapidly gaining ground in this country.

The more long drawn out the period of transition from the "Hartert" (= *The Handbook*) order to the Wetmore order, the greater will be the inconvenience caused. Our aim is to reduce this to a minimum and we propose therefore to adopt forthwith the use of the Wetmore order in *British Birds* starting with the present number.

The Wetmore classification gives a sequence for orders and families of birds. It does not define the arrangement of genera and species within each family, and there is thus much room for argument on sequence of species in any particular family. The over-riding consideration at this time, however, is to bring the Wetmore order into general use. As a matter of practical convenience, a defined sequence of species is necessary. Here expediency calls for the minimum divergence from the B.O.U. *Check-List*. However, we cannot agree with the B.O.U. List Sub-Committee when they interpose Great Skua between Arctic and Pomarine Skuas, Richard's and Tawny Pipits between Meadow and Tree Pipits, or Corn Bunting between Yellowhammer and the rest of the buntings. In each of these groups we will list the above first-named species first. There are various other points where we would differ from the List Sub-Committee, such as their re-arrangement of genera within the Anatidæ, and the inclusion of Wallcreeper in the Sittidæ. Nevertheless, to avoid unnecessary confusion of detail at this time of change-over from the one system of classification to the other, we propose at present to follow in other respects the sequence of species as published in the B.O.U. *Check-List*, realising that, later on, some changes in the sequence may be unavoidable.

In view of the fact that the International Commission on Zoological Nomenclature now has before it a number of disputed scientific names on which it is expected to make a pronouncement in a few months' time, it seems undesirable to make any changes in the scientific nomenclature used in *British Birds* until the International Commission's rulings are known.

With regard to the English names it is pointed out in the Introduction to the *Check-List* that they can be subject to no definite rules and that the authors of the *List* follow what they believe to be

the accepted current usage. They recognize that English names are properly subject to changing customs (e.g. Goldcrest), but they do not regard their function as going beyond taking account of changes which have been already generally accepted. *British Birds*, as a periodical in regular touch with British field observers, has always taken and must continue to take a somewhat less passive attitude on this question and so be ready to give a lead. For example, *British Birds* adopted "Goldcrest" in 1937, simultaneously with *The Handbook*, and this is now agreed by the B.O.U., who however regard the almost obsolete "Redbreast" as being "still the proper name for the Robin."

We are therefore not necessarily following the B.O.U. *Check-List* where it has varied the English names used in *The Handbook*. The following changes are being introduced now in *British Birds*, and others may be announced from time to time. We would be glad to hear from ornithologists who have suggestions to make on this subject. One of the considerations in making changes in the names of vagrants is the English name in current use where the bird is common. Particularly does this apply to certain American species (e. g. Dowitcher, Yellowlegs, etc.).

In addition to the changes listed below, all hyphens preceding capital letters will be dropped; they will only be retained in such cases as "Black-tailed", "Broad-billed", etc., or in an awkward example such as "Bee-eater".

<i>The Handbook</i> NAME	NEW NAME
White-billed Northern Diver	White-billed Diver
Leach's Fork-tailed Petrel	Leach's Petrel
Madeira Fork-tailed Petrel	Madeira Petrel
Mediterranean Shearwater*	Cory's Shearwater
North Atlantic Shearwater*	
Fulmar Petrel	Fulmar
Common Heron	Heron
Buff-backed Heron	Cattle Egret
American Wigeon	Baldpate
Scaup-Duck	Scaup
Common Pochard	Pochard
Buffel-headed Duck	Buffelhead
Common Eider	Eider
Common Buzzard	Buzzard
Peregrine Falcon	Peregrine
Common Partridge	Partridge
Common Crane	Crane
Carolina Crake	Sora Rail
Corn-Crake	Corncrake
Macqueen's Bustard*	Houbara Bustard
Oyster-catcher	Oystercatcher
Killdeer Plover	Killdeer
Red-breasted Snipe	Dowitcher
Common Snipe	Snipe
Bartram's Sandpiper	Upland Sandpiper
Common Curlew	Curlew
Greater Yellowshank	Greater Yellowlegs
Yellowshank	Lesser Yellowlegs
American Stint	Least Sandpiper

<i>The Handbook</i> NAME	NEW NAME
Bonaparte's Sandpiper	White-rumped Sandpiper
American Pectoral Sandpiper	Pectoral Sandpiper
Siberian Pectoral Sandpiper	Sharp-tailed Sandpiper
Pomatorhine Skua	Pomarine Skua
Pallas's Sand-Grouse	Pallas's Sandgrouse
Wood-Pigeon	Woodpigeon
-----	Collared Turtle Dove
American Nightjar	American Nighthawk
Wood-Lark	Woodlark
Sky-Lark	Skylark
Wall-Creeper	Wallcreeper
Tree-Creeper	Treecreeper
Rock-Thrush	Rockthrush
Eversmann's Warbler*	Arctic Warbler
Hedge-Sparrow	Duncock <i>or</i> Hedge Sparrow
Hornemann's Redpoll* } Coues's Redpoll* }	Arctic Redpoll
Common Crossbill	Crossbill
Yellow Bunting	Yellowhammer

[Those marked * are subspecific names for which *The Handbook* did not give a specific name, although the races are practically inseparable in the field. The new name in each case is a species name, embracing the races concerned.]

Now, another matter—it is quite a long while now since G. K. Yeates began to help with the collection of photographs for *British Birds*, particularly of those appearing in the series of rarely photographed species, and during that time his advice and the wideness of his circle of contacts among bird-photographers have been invaluable. We feel, however, that it will be more satisfactory to all concerned if he joins us on a more official basis, and we are very pleased therefore to be able to say that Mr. Yeates has agreed to become our Photographic Editor. Any photographs, other than those illustrating or supporting a paper or note, may be sent to him at Oldstead, High Birstwith, Harrogate, Yorkshire.

We regret, and hope shortly to bring to an end, the delays in publication which have affected recent issues through circumstances beyond our control.

THE MIGRATIONS OF BRITISH AUKS (ALCIDÆ) AS SHOWN BY THE RESULTS OF MARKING.*

BY

A. LANDBOROUGH THOMSON, C.B., D.Sc.

THE purpose of this paper is to analyse the recovery records of birds of species of Alcidæ ringed at their breeding stations on the coasts of the British Isles, under the scheme now managed by the Bird-Ringing Committee of the British Trust for Ornithology and earlier by the late H. F. Witherby, Editor of *British Birds*.

* A publication of the British Trust for Ornithology.

There are good series of records for the Razorbill and the Guillemot, a negligible number for the Black Guillemot and an interesting but numerically rather inadequate series for the Puffin. The several series are examined separately; and then some comparisons are drawn between the migratory movements of the British communities of these related species of similar breeding and feeding habits.

RAZORBILL (*Alca torda*).

The number of Razorbills ringed under the scheme to September, 1951, was 7,336. The number reported as recovered up to the time of writing in August, 1952, was 169. This gives a recovery rate of 2.3 per cent. (This basis of calculation brings in the heavy first-year mortality of even the most recently marked birds included in the total, and over a long period must give a percentage approximating closely to a final recovery figure for the population at risk.) Of these records, however, 22 have had to be discarded owing to the information being incomplete or uncertain; in some cases the ring numbers had become partly obliterated, while in others only the loose ring was found—sometimes in the pellet of a Great Black-backed Gull (*Larus marinus*)—so that no date could be assigned, although it would in most cases probably have been within the nestling period. On the other hand, three birds have each been reported on two occasions and the recoveries have been included in the tables as if they related to different birds; all were ringed as adults, were first recovered in a subsequent season at the same place and were later recovered elsewhere.

It is noteworthy that in the case of recoveries in the British Isles the birds are usually said to have been "found dead"—sometimes with the ominous addition of "oiled"; whereas in the case of recoveries abroad, the statement is not uncommonly "shot". The habit of shooting birds of this species on the coasts of some continental countries may therefore tend to inflate the proportion of foreign recoveries in the total. Occasionally, moreover, more than one ringed bird is shot from a single flock, thus providing a nearly duplicate record.

The records fall into the following groups, according to the localities of marking:

<i>Ringed Locality</i>	<i>Ringed as young</i>	<i>Ringed as adults</i>
South Wales	81	29
Lundy Island... ..	14	3
North-west Scotland...	13	4
Other localities	5	1
	113	37

The age distribution of the records for those ringed as young, reckoning years of life from 1st July, is: first year, 90; second, 15; third, 2; fourth, 3; fifth, 2; seventh, 1. One bird ringed as an adult was recovered nearly seven years later,

Birds from South Wales and Lundy Island.

The recoveries of birds ringed respectively in Pembrokeshire (nearly all on Skokholm or Skomer) and on Lundy Island, about 55 miles south-eastwards in the Bristol Channel, were first analysed separately. As no difference in pattern was apparent, the results are consolidated in this presentation. The recovery records have been grouped in zones, defined for the purpose as follows:—

Home Waters. This zone has been taken as comprising the Irish Sea and its approaches and the English Channel. It includes the whole western seaboard of England and Wales; the south-west of Scotland, the most northerly records on this side being from the Firth of Clyde; the Isle of Man; the coasts of Ireland, but with only one record from its west coast; and the English and French coasts of the Channel, east to the Straits of Dover but with a numerical preponderance on their western halves. (Records from this zone in August reveal movements of no great extent, but even by September there are recoveries from south-west Scotland and north-west France.)

North Sea. This zone comprises the coasts of the North Sea and the Kattegat, with the Norwegian coast as far north as Kristiansund in Nordmøre. There are records from the eastern seaboard of Great Britain, as far north as Aberdeenshire, and from Holland and Denmark, in the latter case as far as Sjælland; but most are from south-west Norway. The existing records suggest that the North Sea is entered by way of the English Channel, but negative evidence is not sufficient to exclude the possibility that some birds go round the north of Scotland.

Biscay. This zone comprises the west coast of France and the north coast of Spain, from Ushant to Cap Ortegal.

Peninsula. This zone comprises the western seaboard of Spain and Portugal, from Cap Ortegal to Gibraltar.

Mediterranean. The records from the Mediterranean Sea relate to the eastern coasts of Spain, the south coast of France, the coast of Italy bordering the Gulf of Genoa, and the north coast of Africa as far east as Dellys in Algeria.

The seasonal incidence of the records in the several zones is given, month by month, in Table I, and their more precise geographical distribution is shewn in the following list.

RECOVERY LOCALITIES OF RAZORBILLS RINGED IN SOUTH WALES
AND ON LUNDY ISLAND.

HOME WATERS :

S. Wales and Bristol Channel—Pembrokeshire, 12; Carmarthenshire; Glamorgan, 3; N. Devon; N. Cornwall, 4.

Irish Sea and northwards—Co. Wexford (Ire.), 2; Cardiganshire; Merioneth; Caernarvonshire, 3; Anglesey; Cheshire; Lancashire; Isle of Man; Co. Down (Ire.); Ayrshire, 2; Argyll, 2.

West of Ireland—Aran Isles (Co. Galway).

South of England—S. Cornwall, 7; S. Devon; Dorset, 2; Sussex, 5; Kent, 2.

N. France and Channel Is.—N. Finistère, 3; Côtes-du-Nord; Ille-et-Vilaine; Guernsey (C.I.), 2; Manche, 3; Somme.

NORTH SEA :

East of Great Britain—Suffolk ; Lincolnshire ; Co. Durham ; Aberdeenshire.

Holland—Noord Holland.

Denmark—N. Jylland ; E. Sjælland.

S.E. Norway—Vest-Agder ; Aust-Agder ; Östfold.

W. Norway—Rogaland, 2 ; More (Romsdal).

BISCAY :

Western France—S. Finistère, 2 ; Morbihan, 4 ; Charente-Inférieure ; Gironde, 3 ; Landes, 3 ; Basses-Pyrénées.

N. Spain—Guipuzcoa, 3 ; Vizcaya, 3 ; Santander ; Oviedo, 3 ; "Cantabrian coast" ; Lugo, 2.

PENINSULA :

W. Spain—Pontevedra, 4.

Portugal—Douro, 2 ; Algarve, 2.

MEDITERRANEAN :

E. Spain—Alicante ; Barcelona.

S. France—Bouches-du-Rhône, 2 ; Var ; Alpes-Maritimes.

N.W. Italy—Liguria, 5.

Algeria—Ténès ; Dellys.

TABLE I
RECOVERIES OF RAZORBILLS RINGED IN SOUTH WALES
AND ON LUNDY ISLAND : SEASONAL INCIDENCE.

Zone	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	Total	
Home Waters	...	5	11	12	7	2	2	4	3	6	4	7	3	66
North Sea	...			1	4	2	2	1	1	1	1			13
Biscay	...				6	5	2	4	6	1	1	1	1	27
Peninsula	...				1	4	1	2						8
Mediterranean	...					2	7	2	1		1			13
Total	...	5	11	13	18	15	14	13	11	8	7	8	4	127

Inspection of Table I shows records from Home Waters (as defined above) in every month of the year, but fewer in mid-winter than in autumn or spring ; and that records from the North Sea are from September to April but mostly from October to December. As regards the main southerly movement, records from the Bay of Biscay are mainly from October to February, but with a lag into spring ; and those from Peninsula and western Mediterranean waters mainly from November to January.

The same figures are analysed in Table II, in more compact form but differentiating between recoveries in the first year of life (reckoned from 1st July) and those in subsequent years, the latter group of course including all birds ringed as adults.

Table II shows that the proportion of birds of the year reaching Peninsula and Mediterranean waters is substantially higher than in the case of older birds ; and that the young birds also seem to be earlier in reaching the Bay of Biscay. On the other hand, the movement into and across the North Sea is much more pronounced among birds more than one year old. These points may possibly all be aspects of a single difference, namely that a definite southerly movement is more frequently performed by yearling birds, as has been noted in various other species, and that in its absence there is a greater tendency towards lateral movement to the east and north.

TABLE II
RECOVERIES OF RAZORBILLS RINGED IN SOUTH WALES AND ON
LUNDY ISLAND : AGE DIFFERENTIATION.

Zone		July-Oct.	Nov.-Feb.	Mar.-June	Total
First year of life					
Home Waters	... ..	25	5	6	36
North Sea	... ..		2		2
Biscay	... ..	6	9	1	16
Peninsula	... ..	1	6		7
Mediterranean	... ..		11	1	12
Subsequent years					
Home Waters	... ..	10	6	14	30
North Sea	... ..	5	4	2	11
Biscay	... ..		8	3	11
Peninsula	... ..		1		1
Mediterranean	... ..		1		1

There is some slight indication that the movement may vary as between one winter and another. The two winters which produced the largest number of recoveries show a strong contrast in this respect. In 1938-39 the recoveries from October to March in the Biscay, Peninsula and Mediterranean zones numbered 1, 0 and 9 respectively (0, 0 and 8 for yearling birds alone). The corresponding figures for 1949-50 are 10, 6 and 1 (6, 5 and 1). The figures for other years are too small for analysis, and even those quoted may not represent more than a chance incidence. With all reserve, it may be mentioned that the proportion of North Sea recoveries (1 yearling, 4 others) was noticeably high in 1948-49, for which there were otherwise few records.

If there is indeed a substantial variation in the movement from year to year, it might have some disturbing effect on the analysis in respect of age as the number of ringed birds "at risk" is not necessarily uniform.

The records from Home Waters include a few showing the return of birds ringed as adults to their former breeding station in subsequent years, but not as many as the recurrent activities of ringers at some of these places might have led one to expect. In the circumstances, the absence of records indicating a change of breeding locality has little evidential weight.

Birds from other localities.

There are a few isolated records from other localities in or near the Irish Sea that seem to fit into the general pattern shewn by the South Wales and Lundy birds. Birds ringed as young on Anglesey, the Isle of Man (2) and Bull Rock, Co. Cork, have been recovered in their first year on, respectively, the north coast of Spain (Nov.), the Biscay coast of Brittany (Oct. and Dec.) and the east coast of Spain (Dec., near Barcelona). One ringed on Ailsa Craig was recovered in November of the same year still within the Firth of

Clyde. Finally, one ringed as an adult on the north coast of Cornwall was recovered in Pembrokeshire in August two years later.

Birds from north-west Scotland.

There remains a small but interesting series of recoveries of birds ringed on the west coast of Sutherland and in the Outer Hebrides. With the exception of one bird ringed as a nestling and one ringed as an adult, and both recovered in June—one year and three years later respectively—at the place of marking, all the records are from the far side of the North Sea. The localities range from the Little Belt in Denmark to Vaeroy in the Lofoten Islands (two records in each case), but are mostly in south and south-west Norway. The monthly incidence of such records in the first year of life is: September, 1; October, 6; November, 2; May, 1; June, 1 (Total 11). The incidence in subsequent years is: July, 1; October, 1; November, 1; January, 1 (Total, 4). The absence of records from intermediate points, or showing a southerly movement down the west coast of Great Britain, is remarkable.

Birds ringed abroad.

Apart from isolated published records, the results of ringing Razorbills in northern Norway have recently been given by H. Holgersen (1952) in a paper "Hvor kommer alkene fra?" (*Stavanger Museums Arbok* 1951). He concludes that only a few remain near their northern breeding-places in autumn and winter; most of them are then found on the coasts of southern Norway, a few reaching the west coast of Sweden and the outer Baltic. The high recovery rate of 19.4 per cent. is attributed to "the extensive hunting along the southern coasts."

GUILLEMOT (*Uria aalge*).

The number of Guillemots ringed under the scheme to September, 1951, was 4,566. The number reported as recovered up to August, 1952, was 113. This gives a recovery rate of 2.5 per cent. Of these records, 3 have had to be discarded for uncertainty.

The records fall into the following groups, according to the localities of marking:—

<i>Ringed Locality</i>	<i>Ringed as young</i>	<i>Ringed as adults</i>
Wales and Lundy Island	54	7
East coast of Great Britain	23	4
Firth of Clyde	15	—
West and N.W. Scotland	2	3
Ireland	2	—
	96	14

(The birds from west and north-west Scotland, and those from the Scottish portion of the east coast of Great Britain, can be assumed to belong to the northern race, *U. a. aalge*; the rest to the southern race, *U. a. albonis*.)

The age distribution of those ringed as young, reckoning years

of life from July 1st, is : first year, 80 ; second, 11 ; third, 2 ; fourth, 3. Two birds ringed as adults were recovered at the places of marking nine-and-a-half and nearly eleven years later, respectively: the rings were described as " fragmentary " in one case and " much worn " in the other, but the numbers were decipherable with certainty.

Birds from Wales and Lundy Island.

This series of recoveries relates mainly to birds ringed on Skokholm and Skomer, off Pembrokeshire, with a few ringed in Anglesey (North Wales) and on Lundy Island in the Bristol Channel. The recovery records have been grouped in the same zones as used above for the Razorbill, except that there are no Mediterranean records. The seasonal incidence is shewn in Table III, and the more precise geographical distribution in the following list :—

RECOVERY LOCALITIES OF GUILLEMOTS RINGED IN
WALES AND ON LUNDY ISLAND.

HOME WATERS:

S. Wales and Bristol Channel—Pembrokeshire, 4 (one ringed Lundy) ; Glamorgan, 3 ; N. Cornwall, 7 ; N. Devon.

Irish Sea and northwards—Co. Wexford (Ire.) ; Cardiganshire ; Caernarvonshire, 2 ; Anglesey (ringed Pembs.) ; Cheshire (ringed Anglesey) ; Lancashire (ringed Anglesey) ; Co. Down (Ire.) ; Co. Antrim (Ire.), 2 ; Bute ; Argyll.

South of England—S. Cornwall, 4 ; S. Devon, 5 ; Dorset ; Kent, 2.

N. France and Channel Is.—N. Finistère ; Ille-et-Vilaine ; Jersey (C.I.) ; Alderney (C.I.), 2 ; Manche, 2 ; Calvados.

NORTH SEA :

East of Great Britain—Inverness-shire.

W. Norway—Rogaland ; Hordaland.

BISCAY :

Western France—S. Finistère, 4 ; Morbihan ; Vendée ; Charente-Inférieure ; Landes, 2 ; Basses-Pyrénées.

PENINSULA :

Portugal—Estremadura.

TABLE III
RECOVERIES OF GUILLEMOTS RINGED IN WALES AND ON LUNDY ISLAND :
SEASONAL INCIDENCE.

Zone	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	Total	
Home Waters	...	2	6	14	9	4	1	2	2	2	3	1	1	47
North Sea	...			3										3
Biscay	...			2	1	1		1	2	2	1			10
Peninsula...	...							1						1
Total	...	2	6	16	13	5	1	3	5	4	4	1	1	61

Inspection of Table III shows records from Home Waters in every month of the year, but decreasing in number after the autumn; a few records from the North Sea in October (one from Inverness, N.E. Scotland ; one from Egersund, S. Norway ; one from Bergen, S.W. Norway) ; records from the Bay of Biscay from September to April (all from the French coast) ; and a single more distant record, from Lisbon, in February of the first year of life.

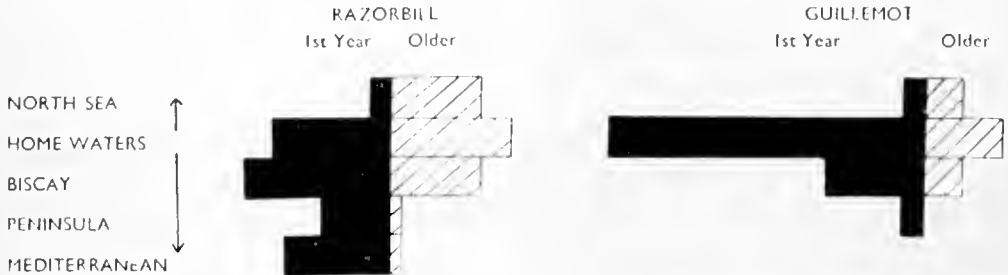
The figures are rather small for detailed analysis, but the totals for the first year of life (reckoned from July 1st) and for subsequent years are as follows :—

Recovery Zone		First year	Subsequent
Home Waters	...	33	14
North Sea	... ..	1	2
Biscay...	... ..	8	2
Peninsula	... ..	1	—
		—	—
		43	18

There is just an indication that the proportion of birds travelling to or beyond the Bay of Biscay is higher in the first year than later.

TABLE IV : RAZORBILL (*Alca torda*) AND GUILLEMOT (*Uria aalge*).

Zonal distribution of recovery records from October to March, in the first year of life and later, of birds ringed at breeding-places in Wales and on Lundy Island (Bristol Channel).



To produce comparable totals of records, the horizontal scale for the Guillemot is double that for the Razorbill. "Home waters" include the north coast of France but exclude the east coast of Great Britain. "Biscay" includes the north coast of Spain.

Birds from the east coast of Great Britain.

This series of recoveries relates to birds ringed at various localities ranging from Badbea in Caithness to Bempton in Yorkshire, but notably on the Isle of May in the Firth of Forth and on the Farne Islands off Northumberland.

The numbers are too small for detailed analysis, but the recovery localities may be grouped as follows:—east coast of Great Britain, 6; north coast of France (Somme), 1; Holland, 2; Sweden (Halland), 1; Norway, 17. The recoveries on the east coast of Great Britain were all at or near the respective places of marking except for one bird from the Farne Islands recovered in Suffolk. The French, Dutch and Swedish recoveries all relate to birds from the Farne Islands. Recoveries in Norway relate to all the ringing localities, and were all reported from the south and south-west coasts of that country.

There is an additional record from the former Aberdeen University scheme, not included in the total figures given in this paper. This is of a Guillemot marked as a chick in Aberdeenshire and recovered late in November of the same year on the west coast of Sweden, north of Gothenburg (A. L. Thomson, *Scot. Nat.*, 1912 : 150; *Ibis*, 1921 : 520).

Birds from the Firth of Clyde.

This series of recoveries of birds ringed as young on Ailsa Craig, in the mouth of the Firth of Clyde, is remarkable for the fact that 10 out of 15 localities were within the Firth, notably in Loch Fyne, the records being evenly spread through the first year of life. The

remaining records are from Co. Wexford, Devon and Kent, and (2) from the south-east corner of the Bay of Biscay, in France and Spain respectively.

Birds from west and north-west Scotland.

A bird marked as young on the Treshnish Isles, in the Inner Hebrides (west of Mull), was recovered in December of its first year in the Faeroe Islands—the only record from that quarter. Four birds ringed in the Outer Hebrides or on the west coast of Sutherland, three of them as adults, were recovered in winter in South Norway.

Birds from Ireland.

There is a residue of two records, relating to birds marked as young on the east coast of Ireland and recovered on the west coast of Great Britain.

Birds ringed abroad.

The results of ringing Guillemots on Heligoland have been published by R. Drost (*Vogelzug*, 1, 1930 : 20-29) and by J. Stechow (*Vogelzug*, 9, 1938: 125-138). Out of 1,632 ringed on the cliffs there, 230 (14.1 per cent.) had been recovered by the date of the second publication. Apart from local recoveries throughout the year, most of the records are from southern and western Norway, especially in the early winter months, with a few from further north and a few from the Swedish and Danish coasts at the entrance to the Baltic. There are also some records, usually later in the season, from the German, Dutch, Belgian and English coasts of the North Sea ; from the eastern half of the south coast of England ; from the north and west coasts of France—one as far south as Basses-Pyrénées ; and a single record from as far east as the Gulf of Danzig. There are no records for birds more than one year old from western Norway, northern Norway, the east coast of England, from Belgium or France, or from far into the Baltic.

In addition, Holgersen (*loc. cit.*) has given the results of marking Guillemots in northern Norway. Most of the birds do not move far from the area of their breeding-places there ; but some visit southern Norway (where, as the author remarks, there are also winter records of birds from Murmansk, the Baltic island of Gotland and the Faeroe Islands—as well as from Great Britain and Heligoland as shown above). The recovery rate in this series is 4.6 per cent. The comparison with the results of ringing Razorbills in northern Norway, already quoted from the same paper, is of interest.

BLACK GUILLEMOT (*Uria grylle*).

The number ringed under the scheme to September, 1951, was 209. The number of recoveries reported to August, 1952, was 3. This gives a recovery rate of 1.4 per cent.

One ringed as a young bird in Orkney was recovered at the same place in the following April ; one ringed as an adult on Fair Isle was recovered there a year later ; one ringed as a young bird in the Faeroe Islands (where some birds were ringed under the scheme

during the 1939-45 war) was recovered 20 miles away in August of its first year.

PUFFIN (*Fratercula arctica*).

The number ringed under the scheme to September, 1951, was 7,655. The number of recoveries reported to August, 1952, was 30, making 0.4 per cent. Of these records, 6 have had to be discarded because they represent recoveries at the same place after trivial or uncertain intervals—including one case in which the ring was found on a leg-bone nearly eleven years after the bird had been marked as an adult. The species is a troublesome subject for ringing, owing to the unfortunate facility with which the birds appear to remove their rings: this seems to be reflected in the small percentage of recoveries, as compared with those for the other species.

All the reported birds ringed as young were recovered during the first year of life. Of those ringed as adults, four had carried their rings for from between three-and-a-half to four years, and one for five years.

The records fall into the following groups, according to the localities of marking:—

	<i>Ringed Locality</i>		<i>Ringed as young</i>	<i>Ringed as adults</i>
Wales	2	8	
Farne Islands	...	2	2	
North Scotland	...	4	6	
		8	16	

Birds from Wales.

Two ringed as young in Anglesey were recovered in August and September of their first year, in Cumberland and Lancashire respectively—distances of about 80 and 60 miles. Of birds ringed as adults in south Wales, three were recovered in spring or summer at or near the place of marking, two in Cornwall in early summer, one in Co. Wexford in September of the year of ringing, and two in winter in Gironde on the Biscay coast of France.

Birds from the Farne Islands.

Two ringed as young were recovered in south Norway in their first winter. Two ringed as adults were recovered at the place of marking in June four years later.

Birds from north Scotland.

Five ringed in Orkney and one in Caithness as adults were recovered at the places of marking in subsequent summers.

One ringed as young on the west coast of Sutherland was recovered in south Norway in October of the same year. Of birds ringed as young on St. Kilda, one was recovered on Hoy, Orkney, in the following March and two in north-west Newfoundland (Silver Fox Island in Bonavista Bay, and Twillingate) in December of their first year. Both Newfoundland records refer to the same calendar year, and there is the possibility that the birds were members of a single flock which crossed the Atlantic, although in fact they were

born on different islands in the St. Kilda group and were recovered a considerable distance apart on consecutive days.

CONCLUSIONS.

RAZORBILL (*Alca torda*) :

*(1) Of Razorbills from breeding stations in south Wales and the Bristol Channel, and probably the general area of the Irish Sea and its southern approaches, (a) some remain throughout the winter in home waters, including notably both sides of the English Channel, but also extending in a minority of cases as far north as the Firth of Clyde and round Ireland to its west coast ; (b) some move further south, into the Bay of Biscay and along the western seaboard of the Iberian Peninsula ; (c) some continue the movement, eastwards, into the Mediterranean Sea as far as the Gulf of Genoa on the north side and as Algeria on the south ; (d) some penetrate the North Sea, probably by way of the Straits of Dover, passing up the east coast of Great Britain or the coast of Holland or crossing to south and south-west Norway and the Danish coast of the Kattegat.

*(2) Among Razorbills from these same breeding stations, the southerly movement is more pronounced in the first year of life than among older birds ; the Biscay records tend to be earlier, and those from further south and particularly from the Mediterranean to be more numerous in proportion. At least in the case of the young birds, the movement seems to be more than a dispersal : there is a definite directional trend, and, in so far as the figures can be relied upon as representative, a shift in the centre of gravity of the population.

(3) Also among Razorbills from these breeding stations, it is probable that the extent of the southward movement may vary as between one winter and another ; this seems to apply particularly to movement into the Mediterranean.

†(4) Razorbills from breeding stations on the north-west of Scotland are found in winter on the eastern side of the North Sea, from the Danish coast in the Little Belt northwards and up the Norwegian coast as far as the Lofoten Islands (above the Arctic Circle).

†(5) At least some Razorbills return in subsequent summers to the identical stations at which they were hatched or had bred.

GUILLEMOT (*Uria aalge*) :

*(6) Of Guillemots from breeding stations in Wales and the Bristol Channel, (a) some remain throughout the winter in home waters, particularly the Irish Sea and its southern approaches and both sides of the western half of the English Channel ; (b) some move further south along the French coast of the Bay of Biscay, and occasionally as far as Portugal ; (c) some penetrate the North Sea, reaching the east coast of Great Britain and the south of Norway.

(7) Among Guillemots from these same breeding stations, the southward movement into or beyond the Bay of Biscay is probably more pronounced during the first year of life than later.

†(8) Of Guillemots from breeding stations on the east coast of

Great Britain, (a) some are found on that coast in winter, and into the English Channel as far as north-east France ; (b) some, probably the greater number, cross the North Sea to Holland, the Swedish coast of the Kattegat, and particularly south and south-west Norway.

†(9) Of Guillemots from a breeding station in the Firth of Clyde, (a) some, probably the greater number, remain throughout the winter in that area, penetrating the inner waters of the Firth ; (b) some move southwards to the English Channel and as far as the French and Spanish coasts of the Bay of Biscay.

†(10) Guillemots from breeding stations on the west and north-west of Scotland, including the Inner and Outer Hebrides, have been found in winter on the south and south-west coast of Norway and (in one recorded case) in the Faeroe Islands.

†(11) At least some Guillemots return in subsequent summers to the identical stations at which they were hatched or had bred.

BLACK GUILLEMOT (*Uria grylle*) :

(No conclusions can be drawn.)

PUFFIN (*Fratercula arctica*) :

†(12) Puffins from breeding stations in Wales have been found in winter as far south as the French department of Gironde on the Bay of Biscay.

†(13) Puffins from a breeding station off the north-east of England have been found in winter in the south of Norway.

†(14) Puffins from breeding stations on the north-west of Scotland and on St. Kilda have been found in winter in south Norway, Orkney, and north-west Newfoundland.

†(15) At least some Puffins return in subsequent summers to the identical stations at which they had bred.

COMPARISONS :

*(16) As regards communities breeding in Wales and the Bristol Channel, the movements of the Razorbill and of the Guillemot show a general similarity in pattern ; but those of the Razorbill tend to be more extensive, as evidenced by the more numerous records from the coast of the Iberian Peninsula and by the records, without counterpart for the Guillemot, from the Mediterranean.

†(17) As regards communities breeding on the north-west of Scotland, the movements of the Razorbill and of the Guillemot show generally similar tendencies.

(18) So far as the records go, as regards communities breeding respectively in Wales, on the north-west of Scotland and on the east coast of Great Britain, the movements of the Puffin show tendencies similar to those noted in the case of the Guillemot, except that the records of Puffins crossing the Atlantic Ocean to Newfoundland have no counterpart in respect of the other species.

The conclusions numbered 1, 2, 6 and 16 (marked*) are based on evidence sufficient in volume to justify confidence in regarding the picture presented as being reasonably representative. The con-

clusions numbered 4, 5, 8 to 15 inclusive, and 17 (marked †) are based on evidence which has positive validity so far as it goes but is not sufficient in volume to exclude the possibility that the picture presented is incomplete. The remaining conclusions, 3, 7 and 18, summarise evidence which is no more than suggestive.

Increased efforts to ring Puffins are much to be desired, despite the small percentage of recoveries. Further ringing of Razorbills and Guillemots, particularly at breeding stations elsewhere than in the area of the Irish Sea and its approaches, would also be valuable.

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XLVII. TENGMALM'S OWL.

Photographed by ARNE BLOMGREN AND B. ÖHRN.

(Plates 1-2.)

TENGMALM'S OWL (*Ægolius funereus*) breeds in a fairly specialised habitat—that is, in forest country with a high percentage of coniferous trees, particularly in mountain pine-woods—locally throughout the Northern Hemisphere in temperate and near-arctic latitudes, north to 65° or 70°, south to about 40° in Europe and west Asia, perhaps less far south in central and east Siberia, and in North America from Alaska to British Columbia (south to about 55°). There are several subspecies—and one closely related species, the smaller and more buff-coloured Saw-whet Owl (*Æ. acadicus*) found in North America. Our plates were taken in Sweden by B. Öhrn and Arne Blomgren, to whom we are particularly grateful, for Tengmalm's Owl is indeed a rarely photographed bird.

By day it roosts in the tree-tops, and, except in the northern limits of its range, it is almost completely nocturnal in hunting its prey—chiefly voles and mice. This owl breeds for the most part in holes in trees, sometimes making use of the deserted nests of the larger woodpeckers, in central Europe particularly of those of the Black Woodpecker (*Dryocopus martius*). Not much larger than a Little Owl (*Athene noctua*) it has, however, a characteristic shape, more noticeable in some positions than in others, of an almost disproportionately large, rounded head, devoid of ear-tufts. This and an expression that often appears to be scowling, as a result of darker colour above and around the eyes which are set off in wide facial discs, can well be seen in plate 1, as can the general pattern of the plumage—a combination of near-white and reddish-chocolate (*The Handbook* does not illustrate particularly well either the shape or the colouration of this species). In repose (plate 2, right) its shape is very much reminiscent of the Tawny Owl (*Strix aluco*). Plate 2 (left) is in some ways a less satisfactory photograph, as a

strong light is falling on the bird and this reduces the diagnostic markings, but in this plate one can see fairly well another of the characteristics of Tengmalm's Owl—the complete covering of the legs and toes with long, white feathers. Apart from this feature, and its distinctive colouring and shape, this bird differs from the Little Owl also in its flight which is not bounding as in that species, but is rather more like that of the larger owls, silent and wavering, yet with quicker wing-beats.

To Britain Tengmalm's Owl is no more than a rare vagrant, there being only some 45 records (chiefly October to February), while even some of these are open to doubt; yet it seems quite possible that it may be overlooked for at this latitude it moves entirely by night. This suggestion is perhaps borne out by the fact that there have been very few reports in the last thirty years, most of those recorded having been shot in the old days of collecting.

I. J. F.-L.

PAPER-TEARING BY BIRDS.*

BY

W. M. LOGAN HOME.

INTRODUCTION.

The practice of entering houses and tearing paper, shown by various species of tits, has become widely known in Britain since the autumn of 1949, when the frequency of such attacks reached spectacular proportions. It is, however, both an old and a widespread habit, for Gilbert White recorded tits entering houses (though not tearing paper) in 1774, and paper-tearing by tits has been recorded from several European countries. The present paper represents the results of an attempt to collect data on the occurrence of this behaviour, as a first step towards its better understanding.

SOURCES.

The data summarized here were obtained partly by personal observation, but largely by means of correspondence from observers scattered throughout the country. In the winter of 1948/49 a request for information to *The Field* brought 20 replies, and a further 16 records were received after a notice had been published in the *Bulletin of the British Trust for Ornithology*. In the autumn of 1949, 316 questionnaires were distributed to members of the B.T.O., and to other observers scattered throughout 43 counties in Great Britain, and 242 completed forms were returned. On December 4th, 1949, Mr. James Fisher mentioned paper-tearing in a talk broadcast by the B.B.C., and asked for records to be sent to the writer: over 2,000 replies were received.

* A Report to the British Trust for Ornithology.

SPECIES INVOLVED.

The completed questionnaires gave the following records :—
 Blue Tits (*Parus cæruleus*) only—recorded by 175 observers.
 Both Blue Tits and Great Tits (*P. major*)—recorded by 23 observers.
 Great Tits only—recorded by 17 observers.
 “ Lesser tits ” or “ tits ”—recorded by 25 observers.
 Marsh Tits (*Parus palustris*)—recorded by 1 observer.
 Coal Tits (*Parus ater*)—recorded by 1 observer.
 “ Sparrow ”—recorded by 1 observer.

Of the replies to the broadcast, the vast majority named Blue Tits as the offenders, though there were also a number of records of Great Tits. In addition there were a few records of tamed individuals of other species. These were Budgerigars, *Melopsittacus undulatus* (7); Canaries, *Serinus canarius* (5); Jackdaws, *Corvus monedula* (3); Parrots (3); Rook, *Corvus frugilegus* (1); Chaffinch, *Fringilla cælebs* (1); and Chukor, *Alectoris græca* (1). In addition Miss Len Howard (1952) has recorded the tearing of paper and other materials by tamed Great Tits inside her house regularly over a period of 10 years.

Another record, of a slightly different nature, was given in *The Scotsman* of March 8th, 1952, where the behaviour of a Golden Eagle (*Aquila chrysaëtus*) which entered a stone shelter and tore up some pieces of paper was described.

BEHAVIOUR INVOLVED.

Details of the behaviour involved were recorded by a number of observers, but our knowledge is still very incomplete. In the Blue Tit the movements involved in tearing paper are apparently quite simple. The bird simply perches near the edge of the paper, seizes a corner, and tears the paper away with a sideways movement of the head. When tearing wallpaper, the tits usually concentrate on the upper part of the wall, often clinging to picture cords or curtain poles near the ceiling. In some cases Blue Tits were watched clinging upside down near the top of the wall and tearing off strips of the ceiling paper. Some observers recorded tits as working “ furiously ” at the paper. The scraps of paper were usually not held in the foot or examined, but dropped immediately.

The attacks are sometimes made by single individuals, and sometimes by small groups. Single Blue Tits were watched by the writer for as long as five minutes at a time pecking at one corner of a cardboard carton inside a room.

It is interesting to note that the tits appeared to work with the sun, as many observers reported that the birds entered south and east windows in the mornings, and west windows in the afternoons: this was confirmed by the writer's own experience.

It would seem that, whatever its nature, the “ drive ” or motivation underlying the behaviour of the paper-tearing birds must often be very strong. Thus, although most of the Great Tit records referred to paper-tearing out of doors, many of the Blue Tit records

described the birds actually entering houses and tearing paper (and other materials) *inside*. Further, many observers described Blue Tits which had been ejected from rooms persistently fluttering and pecking at the windows in their efforts to return. Perhaps the most spectacular instance of paper-tearing occurred in the chapel of Haileybury College, where a number of Blue Tits entered through holes in the dome, and made 40 holes through the stucco and asbestos, littering the floor with debris.

MATERIALS ATTACKED.

A list of the materials attacked is given in the Appendix. It will be seen that the great majority of the records refer to the tearing of paper. The paper in question was spread over a surface, such as wallpaper, labels on bottles and boxes; or in the form of newspapers or magazines or dust-covers of books. In addition quite a variety of other articles were attacked, varying from textiles to soap!

SEASONAL DISTRIBUTION OF THE RECORDS.

Paper tearing is much more common in the autumn than at any other time of year. All but 15 of the completed questionnaires gave dates of the attacks, and the vast majority were between September and November. A similar picture was given by the records received as a result of Mr. James Fisher's broadcast. The records are summarized by months in Fig. 1.

It should be added that the records indicate that the autumn outbreak occurred simultaneously all over the country. There was no evidence of spread from one part to another.

POSSIBLE CORRELATION WITH THE WEATHER.

Paper-tearing was much more common in the autumn of 1949 than in any other year within living memory. This could, of course, have been due to an increase in the numbers of tits in that year, and it is a fact that many observers remarked on such an increase. Such expressions as "there has been a plague of tits," "this year they swarm everywhere," came from many observers. However it seems unlikely, even if the tit population was higher, that this alone could be responsible for such a vast increase in the frequency of paper-tearing.

Since 1949 was unusually dry in the late summer and early autumn, and since many observers stated that the attacks ceased when rain came or colder weather started, it seemed possible that there might be some correlation between the frequency of paper tearing attacks and the weather conditions. It is, of course, impossible to establish such a view without detailed observations extending over many years, but some evidence is accumulating in its support:—

(i) Eighty-four records of paper-tearing have been received for various years between 1900 and 1947. In nearly all the years concerned the autumn rainfall was below the average—in some cases as much as 75% below. Information on the autumn



TENGMALM'S OWL (*Aegolius funereus*) ADULT. SWEDEN.
(Photographed by B. Öhrn).
(see page 15.)



THE GREAT HORNED OWL (*Bubo virginianus*)

NO. 11, 1950, G. S. 1011

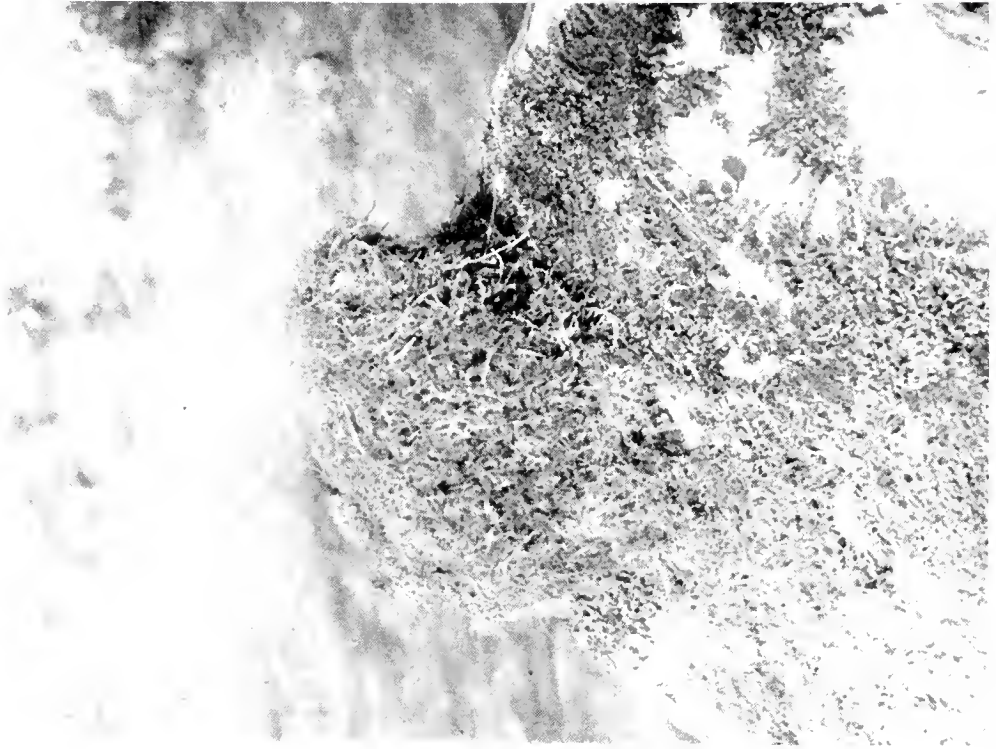
(Photographed by Arne Blomgren.)



THE GREAT HORNED OWL (*Bubo virginianus*)

NO. 11, 1950, G. S. 1011

(Photographed by Arne Blomgren.)



NEST OF DIPPER (*Cinclus cinclus*) ON LIMESTONE
BOULDER IN MID-STREAM.

(Photographed by E. J. Wenham.)

(see page 36.)



PART OF GORDALE BECK, YORKSHIRE, SHOWING NEST
OF DIPPER (*Cinclus cinclus*) ON LIMESTONE BOULDER IN
MID-STREAM.

(Photographed by E. J. Wenham.)



"PELLETS" EJECTED BY GREAT BLACK-BACKED GULLS (*Larus marinus*)
SKOKHOLM, PEMBROKESHIRE.

(Photographed by Douglas F. Lawson.)

The extent to which the larger gulls, like the owls and the diurnal birds of prey, eject the bones and feathers of the prey that they have swallowed is perhaps not generally realised. Two of these castings each contain the head of a Manx Shearwater (*Puffinus puffinus*) and another an almost complete Storm Petrel (*Hydrobates pelagicus*).¹

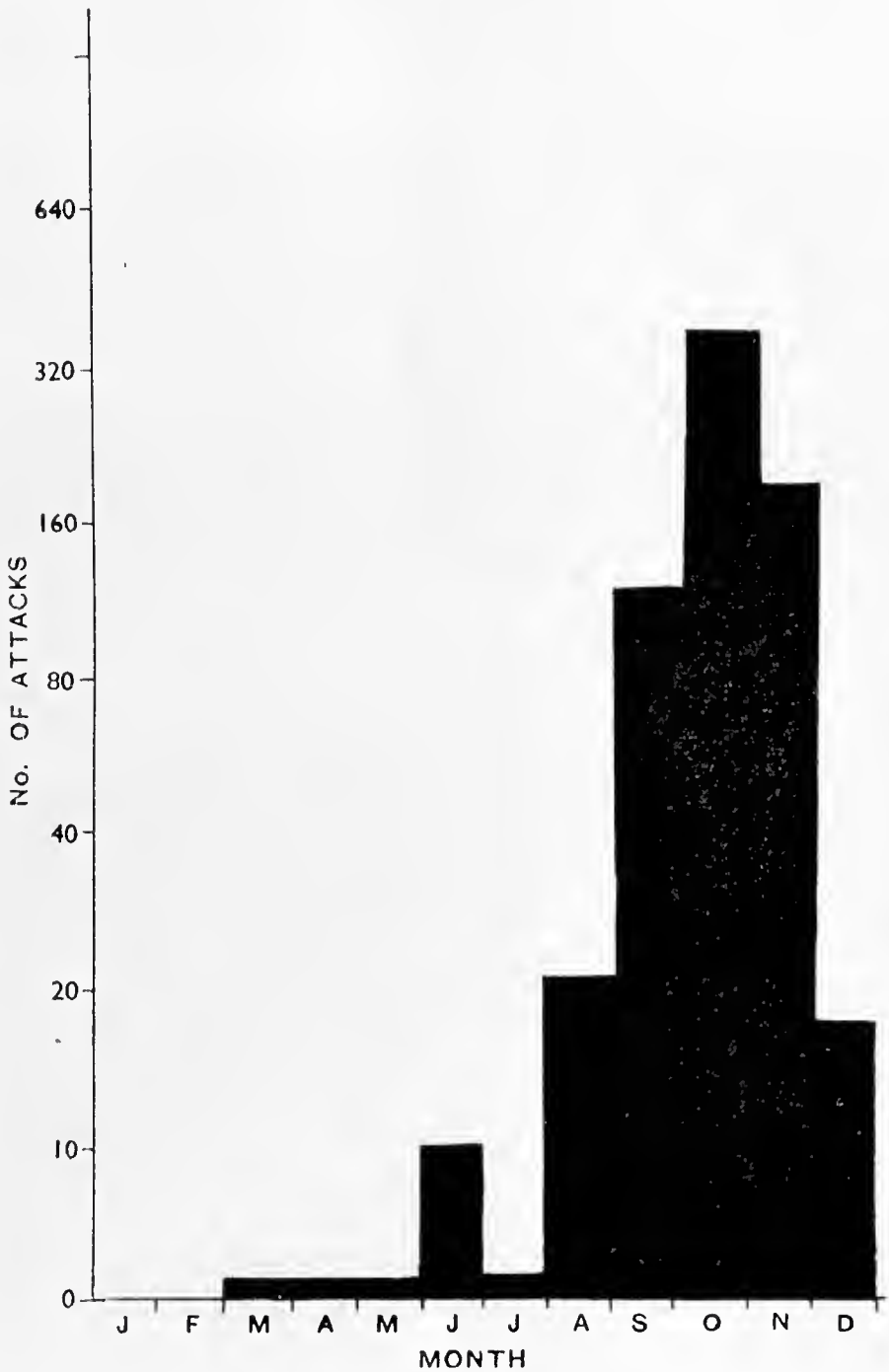


FIG. 1.

NUMBER OF PAPER-TEARING INCIDENTS REPORTED IN EACH MONTH IN 1949.

rainfall in these years is available from the Meteorological Office "British Rainfall" records 1900-1949 (H.M. Stationery Office). Of the 28 years in which at least one paper-tearing incident was recorded, the autumn (i.e. September to November) rainfall was below average in 26 years, and above average in 2 years. Of the remaining years, when no paper-tearing was recorded,

the rainfall was below average in 8 years, and above average in 9 years. (Further details have been deposited in the library of the Edward Grey Institute, Oxford).

(ii) Since 1948, more detailed records are available. In 1949, as stated above, the autumn was very dry, and paper-tearing attacks were very common until the middle of November. The autumn of 1950 was relatively wet, and only 7 cases of paper-tearing came to the writer's notice. In 1951 late September and October were exceptionally dry, and about a dozen cases of paper-tearing were reported. The attacks ceased with the onset of wet weather in November.

It thus seems that there is a greater tendency for paper-tearing to occur in dry autumns, but more data are needed to substantiate this.

IS HUNGER INVOLVED?

One of the facts which emerged most clearly from this enquiry was that the birds were not driven into the houses in search of food because they were exceptionally hungry. The writer kept two well-stocked bird tables outside his house, and on many occasions colour-ringed birds were seen to enter the house and start tearing paper immediately after a good meal at the bird table. In the questionnaires, the observers were asked to state if they habitually fed the birds: 80% of those recording paper-tearing said that they did. Of the letters received after the broadcast, 22% stated that they fed the birds, even though they had not been asked to give this information. Many of the correspondents stated that the birds tore paper or other material and ignored food which was placed near by. Some observers even recorded Blue Tits tearing up the paper wrapped round apples and pears, but they did not touch the fruit.

It thus seems that, although paper-tearing appears at first sight to be a form of food-searching behaviour, the birds are not hungry at the time. The precise nature and significance of the habit thus remain obscure.

ACKNOWLEDGEMENTS.

The writer wishes to thank Mr. James Fisher for asking listeners to his broadcast to send in records of paper-tearing; the Secretary and other members of the British Trust for Ornithology for their assistance, particularly Dr. J. A. Gibb and Dr. R. A. Hinde; and also the many observers who sent in the records on which this report is based.

APPENDIX: TYPES OF MATERIAL TORN BY TITS.

The figures in brackets refer to the number of records of each item received. One record is shown by no figure.

1. *Paper and cardboard*: Wallpaper (1,564), newspaper and magazines (199), covers of books (114), name cards on doors (110), parchment and silk lampshades (106), letters (36), passe partout pictures (36), cardboard cartons (34), seed packets in greenhouses (25), toilet rolls (18), grease bands on fruit trees (18), match boxes, cigarette boxes and other small boxes (22), notices in church porches (10), pieces of paper between pegs on clothes line (7), paper

wraps on fruit (fruit not pecked) (6), labels on bottles (6), paper tops on jam pots (4), ten shilling notes from milkman's book (3), empty firework cases (3), stamps removed from letters (4), paper between beehive supers, label on key (2 Blue Tits fighting over it), paper in shoes pulled out, old licence in car.

2. *Clothing indoors* : Embroidery of curtains (3), knitting wool (2), gloves (2), hood of pram, sofa cover.

3. *Clothing outside* : Washing on line (54), buttons pecked off (3), jumpers, towels, pyjamas, nylons. (Several observers record no damage, with tits merely running up and down the clothing.)

4. *Materials other than paper and clothing* : Leather on clocks, frames and saddles (9), stuffing pulled out of birds and cushions (5), chairs (4), soap (4), wireless aerial (3), asbestos (3), coconut matting, plastic aprons (2), straw baskets, hat, table, gas-cape, pulp-bowl, oilcloth, sponge, sponge-rubber, stucco and plaster in roof of chapel, stair-carpet, electric light switch pecked and switched on, india-rubber.

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A POSSIBLE EXPLANATION OF PAPER-TEARING BEHAVIOUR IN BIRDS.*

BY

R. A. HINDE.

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of Zoology.)

The outbreak of paper-tearing by birds throughout Great Britain in the autumn of 1949 was extraordinarily widespread, and in many places very real damage was done. Col. Logan Home's (1953) careful and interesting report on the habit fills an important gap by describing the behaviour, documenting this outbreak, and by giving some indication of the frequency of the habit in other years. In the following discussion a hypothesis for the causal mechanism underlying the behaviour is suggested.

The movements made by tits tearing paper are very similar to those made in tearing bark from a twig—an activity sometimes common in normal food-searching behaviour, when the tits are feeding on insects, etc., living under the bark. Yet Col. Logan Home's report makes it quite clear that the tits do not actually eat the paper : nor, usually, do they eat anything that they find underneath it. He also brings forward considerable evidence to show that the birds are not hungry when tearing the paper : often they have fed at a bird table immediately previously. Of course, the possibility that the birds are searching for some specific and essential food item temporarily in short supply cannot be entirely ruled out, but the evidence makes this seem highly unlikely. How then is the behaviour to be understood?

Lorenz (1937) has pointed out that the hunting and eating behaviour of many predatory birds are dependent on different causal mechanisms. Although a hungry bird is more likely both

*A Report to the British Trust for Ornithology.

to hunt and to eat than one which is not hungry, it may, if it gets the opportunity, eat without hunting : conversely a satiated bird may hunt without eating. Thus Råber (1949) says that " a satiated owl continues to kill prey even if it does not intend to eat it, whereas in the same situation it refuses meat offered as food ". So strong may be the " drive " to hunt prey that the satiated owl may go through the motions of catching and killing even though no prey is present, as has been recorded by Thorpe (1948). In the normal course of events eating follows hunting because, when hunting has been completed, the stimuli which release eating are presented to the animal. But if the internal drive for eating is too low, these stimuli may be insufficient, and the prey is abandoned. If the prey is obtained without hunting, the eating drive may be satisfied although the hunting drive is not, and the animal then shows hunting behaviour although it is not " hungry."

A similar distinction between hunting and eating can be made in the tits. Thus there are now many records of various species of tits searching for food, carrying off the food particles, and then dropping them and returning for more. Such behaviour occurs when food is superabundant, and is another example of birds showing hunting behaviour when not hungry. The behaviour may actually be rather more complicated than has been indicated, because the food particles seem not merely to be dropped, but hidden : this, however, is probably a secondary development (Hinde, 1952).

Now the hunting behaviour of tits is apparently normally released by quite generalized stimuli—the birds " try " many different possible food sources, and learn to return to those which prove profitable. In this way many tits have learnt to open milk bottles and drink the milk (Fisher and Hinde, 1949 ; Hinde and Fisher, 1951). One of the movements used in opening milk bottles is the same as that used in paper-tearing. It seems, in fact, as though the cardboard tops of milk bottles, wallpaper, and loose bark on a twig all possess certain characteristics which are capable of releasing this tearing movement. Clearly the articles listed in the Appendix to Col. Logan Home's paper are so diverse that they cannot *all* provide the stimuli relevant to this particular form of hunting behaviour ; but the majority could, and the others may release other types of hunting.

On this view, then, paper-tearing is simply an expression of the hunting or food-searching drive. The tits tear paper because, given a certain combination of internal and external causal factors, they must behave in this way. The behaviour brings "satisfaction" because the internal drive finds expression, even though no *immediate* biological advantage is gained. (In the case of the eagle, cited by Col. Logan Home, the movement is one normally used not in hunting, but in preparing the food.) Dr. J. A. Gibb has suggested to me that, in the case of the tits, there may be a long-term advantage in the continuation of hunting behaviour when

the animal is satiated: "It may be of great advantage for an animal which relies on a succession of temporarily (super-) abundant food-sources, each liable to give out at any time, to continue searching whenever its hunger is satiated. For unless a general search is maintained in times of plenty, there will be a hiatus between exhausting one source and discovering the next."

The hypothesis presented here is at present tentative, and requires further confirmation. It almost certainly represents an oversimplification, for the relationships between hunting and eating may be considerably more complex than suggested here. It does, however, place the behaviour against a background of similar behaviour in other species.

Of course, it is still necessary to explain why paper-tearing should have been so much more common in the autumn of 1949 than in other years. With regard to the concentration of attacks in the autumn, however, it may be said that seasonal changes in food preferences are known in other species (e.g. Noll and Tobler, 1924, cited by Tinbergen, 1951). Also J. A. Gibb has told me that Blue Tits, watched by him in a mixed deciduous Berkshire wood from April, 1950 to August, 1951, searched dead parts of the trees and shrubs more often in autumn than at other times of year: from April to July less than 5% of all the Blue Tits observed were searching dead parts; in September 16%; October 25%; November and December 20%; January 15%; February 8% and March 7%. It will be seen that the seasonal change in the extent to which the Blue Tits feed on the dead parts of the trees bears a very close resemblance to the seasonal change in the frequency of paper-tearing. This is additional evidence that these two activities have a common causal basis.

Dry autumns could, of course, react on the food-searching behaviour in a number of ways, but further discussion on this point is not profitable until the correlation between the frequency of attacks and dry weather is further substantiated.

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OCTOBER PASSERINE MIGRATION ON THE SOUTH LANCASHIRE COAST.

BY

R. J. RAINES, M.B.O.U.

THIS paper describes the results of observations on diurnal movements of passerines and other species on the south Lancashire coast, during October and early November, 1951. The work was undertaken in the hope of being able to add to the increasing knowledge of this type of migration in the British Isles, by gathering a picture of the movements occurring in this area and by determining the reactions of westerly moving birds on reaching the west coast. Much has already been described in recent papers regarding behaviour, mode and time of occurrence of diurnal migrants; a list of references to these papers is appended and it is not proposed to reiterate descriptions where the present observations are in agreement.

The principal site of observation was Formby Point, at the mouth of the Mersey Estuary, but observations were also carried out at many places between Southport and Crosby, and every opportunity was taken to trace movements and individual parties of migrants. The firmness of the sand all along the shore made the use of a bicycle possible; this greatly eased the task of following the birds.

Mr. N. Harwood kindly made almost daily observations on the

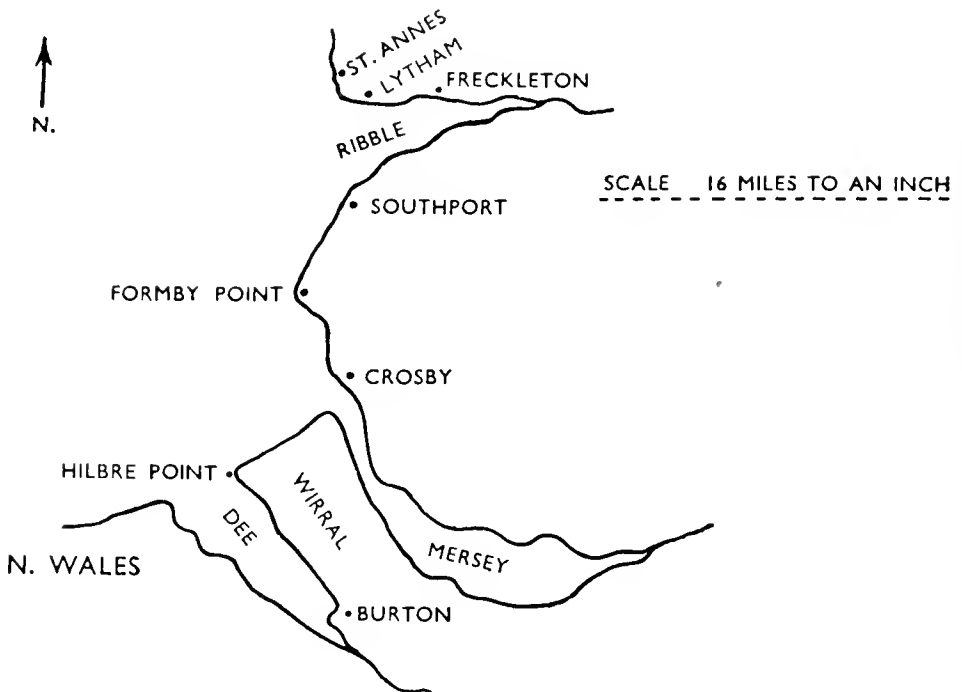


Fig. 1. OBSERVATION SITES

north Lancashire coast at St. Annes-on-Sea and along the north bank of the Ribble estuary. Mr. D. Behrend was good enough to make several observations in Wirral and the Dee estuary. The work of these observers provided evidence of continuity of movement and confirmation of the reactions of migrants. The outline of the coast and main points of observation mentioned above are shown in Fig. 1.

SPECIES.

The following is a list of species observed ; they are given in the order of frequency of occurrence :—Chaffinch (*Fringilla cœlebs*), Skylark (*Alauda arvensis*), Starling (*Sturnus vulgaris*), Linnet (*Carduelis cannabina*), Greenfinch (*Chloris chloris*), Meadow Pipit (*Anthus pratensis*), Pied Wagtail (*Motacilla alba yarrellii*), Redwing (*Turdus musicus*), Fieldfare (*Turdus pilaris*), Tree Sparrow (*Passer montanus*), Brambling (*Fringilla montifringilla*), Redpoll (*Carduelis flammea*), Goldfinch (*Carduelis carduelis*), Reed Bunting (*Emberiza schœniclus*), Carrion Crow (*Corvus corone*), Yellowhammer (*Emberiza citrinella*).

Of these species the Chaffinch was the only migrant seen in large numbers throughout the period of observation, but Pied Wagtails, Meadow Pipits and Reed Buntings occurred daily in small numbers. Linnets, Greenfinches, Redwings and Fieldfares were noted in large numbers during the second and third weeks of October, and at this time flocks of Redpolls, Goldfinches and Tree Sparrows were frequent. Skylarks and Starlings moved through in very large numbers from the middle of October onward. Bramblings and Carrion Crows were seen in considerable numbers in the last week of October and early November.

In addition to species mentioned above, odd flocks and isolated birds of the following species were seen as shown : these birds behaved precisely like the more common species of migrants and most were seen taking off over the sea ; there is no reason to suppose that they were not “bona fide” diurnal migrants :—Dunnock (*Prunella modularis*)—frequent, Blue Tit (*Parus cœruleus*)—frequent, Rock Pipit (*Anthus spinoletta*)—frequent, Woodlark (*Lullula arborea*)—three times, Cirl Bunting (*Emberiza cirlus*)—twice, Swallow (*Hirundo rustica*)—once, Lapwing (*Vanellus vanellus*)—once, Snipe (*Capella gallinago*)—twice, Common Tern (*Sterna hirundo*). The record of the last species concerned a party of eleven which arrived from the east on October 10th, and exhibited great excitement on reaching the shore.

DESCRIPTION.

Movements witnessed at Formby Point and along the coast between Southport and Crosby were very complex, but it was found that there were three apparently distinct streams of birds arriving from different directions, viz :—one following southward along the coast ; one arriving from the east ; one arriving from the N.W. The coastal movement and the movement from the east

occurred almost daily and often concurrently, that from the north-west was less regular. All movements occurred within the period from sunrise to mid-day, thereafter only odd and irregular parties of migrants were seen.

To facilitate description the three streams of migrants will be described separately :—

Coastal Movement.

This movement took place over the sand dunes and shore, parallel with the coast line. It was approximately half a mile in width with the greatest concentration of birds moving along the edge of the dunes. All species of birds mentioned above were concerned. The strength and duration of movement varied daily, on some days a continuous stream of birds persisted throughout the morning, on others movement was represented by sporadic parties of birds only. Daily counts and brief details of movements are set out in Table I.

TABLE I. MOVEMENTS IN THE VICINITY OF FORMBY POINT.

Date	Weather	Coastal	Movements		
			From East	From N.W.	
4.x.	Mist, fine. Light wind	...	c.150/hr.	Little movement	Nil.
5.x.	Light N.E. wind, some fog	...	c.150/hr.	c.100/hr.	Nil.
6.x.	Light N.E. wind, mist	...	200	400	Little
7.x.	Fresh S.W. wind	...	1500	2700	Little
9.x.	Fresh S. wind	...	1100	250	1000
10.x.	Light S. wind, mist	...	900	350	300
11.x.	Light S. wind, mist	...	600	400	400
12.x.	Light S.E. wind, fine	...	c.200/hr.	c.100/hr— a small rush of 490/3hr. at noon	60
14.x.	Light S. wind, fine	...	c.100/hr.	c.100/hr.	40
15.x.	Fog	...	Little	Little	Nil
16.x.	Little wind S., fog	...	Little	Little	Nil
18.x.	Light S.W. wind, cold	...	500	400	c.100/hr.
19.x.	Light S. wind, warmer	...	3600	450	60
20.x.	Light S.W. wind	...	1550	950	350
21.x.	Strong S.W. wind, cold	...	c.1000/hr.	c.10,000/hr.	Nil
					observed
23.x.	Light N.W. wind, warmer	...	c.150/hr.	c.100/hr.	Nil
24.x.	Fresh N.E. wind	...	1200	300	c.50/hr.
25.x.	Strong N.E. wind, dull, cold	...	Little	Little	250
26.x.	Light S.-S.E. wind, frost	...	Little	Little	200
27.x.	Fresh S.E. wind, warmer	...	800 all Starlings	Little	Little
28.x.	Strong S.E., dull	...	4800	c.250/hr.	2300
29.x.	Fresh S.W. overcast	...	2100	1000	120
31.x.	Light S.W. wind, dull	...	Little	Little	Nil
3.xi.	Fresh N.E. wind	...	c.200/hr.	3150	Nil
6.xi.	Strong S.E. wind, rain	...	4600	Little	2150
14.xi.	Light S.W. wind, rain	...	c.500/hr.	5200	Nil

Explanation.

The above table shows the strength of the migration compared with the weather conditions on each day of observation. The figures shown repre-

sent the number of birds, reduced to the nearest round figures, passing within range of the observer during the peak hour of movement for each direction. For the sake of completeness an estimate, indicated by the abbreviation *e.*, is given for those days when accurate counting was not maintained.

Birds which were seen arriving from the east and turning southward at the coast were not included in the count of the coastal movement.

It should be noted that the peak number in each of the three movements did not necessarily correspond in time.

Correlation of movements with the weather conditions and wind direction was not conclusively established. There was no day on which it could be said there was no movement and migration continued under diverse weather conditions. On some days, when the numbers of migrants seen was minimal, conditions appeared favourable, thus on October 14th, with fine weather and a light southerly wind, only irregular small parties of birds were seen, whereas five days later, under conditions which appeared similar, birds were passing at the rate of over 3,500 per hour. Other minimal movements occurred with fog on October 15th and 16th, and on October 25th and 26th when there was a big drop in the temperature. Very strong movements were noted on four occasions, two occurred when there was a strong S.E. wind and overcast sky, one during a S.W. wind and overcast sky and the fourth, that mentioned above, with a light, south wind and clear sky.

A great deal of time was spent in tracing movement and observing the reactions of migrants. Six observations were made at Southport during October. On each of these occasions migrants were seen arriving over the Ribble estuary from the direction of St. Annes, whilst a further stream of birds were moving along the south bank of the estuary. All these birds continued their flight along the coast, but their total number was small and insufficient to account for the number passing Formby Point. Observations at many points along the coast between Southport and Formby showed that the movement was continuous, and that it was augmented by birds which were coming from the east and turning southward on reaching the coast. Parties of birds were also seen to break off from the main stream and move out to sea in the direction of the North Wales coast. This latter tendency became more pronounced nearer Formby Point, where the coast line bends sharply to the S.E. At the Point there was a division of the movement: a large percentage of birds continued their flight out to sea S.S.W. or turned S.W., the remainder continued to follow the coast S.E. up the estuary. The percentage of birds continuing flight out to sea varied in individual movements between 40% and 80%. Starlings, Skylarks and thrushes were more inclined to leave the coast than finches and buntings, nevertheless many of the former species turned S.E. at Formby Point, and many of the latter flew out to sea. Starlings, again, generally continued out to sea without pause, whereas Skylarks and finches usually hesitated and often made several trial flights over the water, before finally moving out

of sight. Migrants which turned to follow the coast up the Mersey sometimes penetrated as far as Crosby, seven miles from Formby Point, but the majority crossed the river before this.

Mr. Harwood's observations at St. Annes and Lytham showed that there was a southerly movement along the North Lancashire coast similar to that described above; the number of birds concerned was, however, small. Continuing his observation along the coast, he found that there was a division of the movement at the mouth of the Ribble estuary, a small proportion of the birds moved out over the estuary towards Southport, the remainder turned east along its north bank. Since he was unable to observe any movement at Freckleton, eight miles from the mouth of the estuary, it is considered that migrants must have crossed before this. These observations taken in conjunction with those made at Southport, suggest that movement is continuous across the estuary, and that many migrants move some distance up the river before crossing.

Mr. Behrend observed migrants moving S.W. on the north coast of Wirral, but he emphasises that the birds did not come directly along the coast and presumed that they came from the Lancashire coast. At Hilbre Point there was a divergence, most, but not all of the Starlings went straight across the estuary, most finches turned up the estuary. A further observation showed that the latter birds probably continued up the Dee as far as Burton, 12 miles from its mouth, since he was able to record a strong S.E. movement in that area.

Movements described above are shown diagrammatically in Fig. 2.



Fig. 2. COASTAL
MOVEMENT



Fig. 3. MOVEMENT FROM
THE EAST.

Movement from the east.

A well marked movement was observed approaching the coast from directions ranging between due east and N.E. Birds of all species mentioned above were moving on a broad front, striking the coast between Southport and Crosby. No observation was carried out on the south bank of the Ribble, north of Southport, so that the full extent of the front was not determined. On the north bank of the Ribble, however, Harwood was able to observe very few birds arriving from the east. The strength and duration of movements varied daily but attempts to correlate them with weather conditions and wind directions were inconclusive. Brief details of observations and daily weather conditions are set out in Table 1.

A movement witnessed on October 21st was so large as to be outstanding; it commenced about an hour after sunrise and continued, in strength, for over four hours. During a peak period 276 parties, totalling over 5,000 birds, were counted crossing about 300 yds. of the coast line in half an hour. The majority of these birds were Skylarks, Chaffinches and Starlings, but Greenfinches and Linnets were very numerous and many other species were seen in smaller numbers. The earliest parties of birds were coming from E.S.E., but as passage continued, nearly all came from due east and at the close of observation the majority were from north-east. This passage occurred during a strong S.W. wind, there was low cloud and very good visibility, the temperature had dropped over-night and there were several heavy hail showers. These conditions did not alter perceptibly during the morning, so that the marked swing in the direction of origin of the birds could not be explained as a reaction to the varying local conditions.

At the coast, movement was split up and migrants exhibited a variety of reactions, viz.:—a large number of birds continued westerly flight and were lost to sight moving over the sea toward the N. Wales coast; a large number turned to follow the coast southward; a variable number were reflected back eastward; occasional parties turned northward up the coast; a few parties alighted in the sand dunes. These various reactions were common to all species of migrants but certain species exhibited them to a greater or lesser degree. Starlings mostly flew directly out to sea and only small numbers behaved otherwise, on the other hand, Reed Buntings and Yellowhammers were rarely seen taking off out to sea. Again, Skylarks moved out to sea rather more numerously than Chaffinches. The following observation is typical:—October 12th—“At noon a party of *c.* 50 Redwings came over from the N.E., circled at the point, and made off south-east down the coast, a similar party, following almost immediately, behaved likewise. A few minutes later a third party of 24 arrived, these turned N.N.E. up the coast, but were not out of sight before they went back to the east and appeared to alight in a wood. Two further parties, one

of c. 100 and the other of 34, followed in quick succession, these circled, gained height and moved off south west out to sea." (See also Table 2.)

TABLE 2. REACTIONS OF WESTERLY MOVING MIGRANTS AT THE COAST (SKYLARKS AND CHAFFINCHES).

Date	Wind	...	C.	Counted	Number of parties			
					Bent S.	Cont. W.	Bent N.	Back E.
6.x.	N.E. light	...	C.	58	31	15	4	8
			S.	19	5	4	5	4
7.x.	S.W. fresh	...	C.	56	19	27	3	6
			S.	11	3	7	0	1
9.x.	S. fresh	...	C.	13	9	3	0	1
			S.	24	22	2	6	0
10.x.	S. light	...	C.	2	2	0	0	0
			S.	42	21	8	0	13
12.x.	S.E. light	...	C.	31	21	7	1	2
			S.	21	9	11	0	1
14.x.	S. light	...	C.	15	5	7	1	2
			S.	29	5	15	2	7
16.x.	Little S.	...	C.	10	6	4	0	0
			S.	17	10	6	0	1
19.x.	S. light	...	C.	14	7	7	0	0
			S.	30	3	24	1	2
21.x.	S.W. strong	...	C.	100	36	51	5	8
			S.	100	27	62	5	5
24.x.	N.E. fresh	...	C.	20	11	6	2	1
			S.	20	6	8	4	2
28.x.	S.E. strong	...	C.	25	5	14	1	4
			S.	23	6	16	0	1
29.x.	S.W. fresh	...	C.	50	26	18	2	1
			S.	50	15	31	4	0
3.xi.	N.E. fresh	...	C.	50	21	23	3	1
			S.	50	17	31	2	0
14.xi.	S.W. light	...	C.	50	36	4	3	1
			S.	50	24	17	1	5

C. = Chaffinch. S = Skylark.

Explanation.

The above figures represent the numbers of parties of birds counted since it was the reaction of the group which was important. Sample counts only were taken and figures do not necessarily indicate the strength of movement.

The number of parties of birds alighting have not been listed, hence the figures do not always add up to agree with the left hand column. Most birds which alighted did so before reaching the main sites of observation on the coast line.

Those birds which turned southward at the coast joined the coasting stream of migrants described above. The actual direction taken depended upon where they struck the coast; north of Formby Point it was S.S.W., south of the Point it was S.E. Some parties of birds already commenced to turn when some distance from the shore, others continued to the edge of the dunes where they circled and gained height before moving off in a new direction. The numbers of birds reflected at the coast increased considerably toward the end of a movement, and when they were traced back, it was found that many alighted behind the dunes. It was therefore concluded that these were birds which had reached the limit of their effort. The numbers of birds which turned northward at the

coast were small and their subsequent actions were not studied in detail. North of Formby Point several parties were seen to turn back eastward, south of the point many seemed to turn west out to sea.

Many migrants alighted before reaching the sites of observation on the coast and rested in the pine woods and in the fields behind the dunes. Such birds were always most numerous when movement was in progress, some continued flight after a short time, but at the end of the passage on any day, large numbers remained. The latter birds stayed throughout the rest of the day but were not to be found at dawn on the following day. Migration is therefore presumed to continue during the night.

Movement from the North-west.

On most mornings parties of birds were seen arriving on the coast from directions between north-west and N.N.W., but on several dates a continuous stream of birds was observed, generally when the

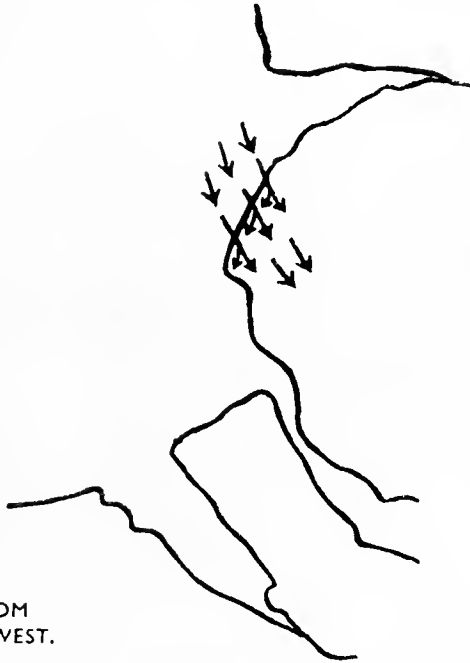


Fig. 4. MOVEMENT FROM
THE NORTH WEST.

wind was from the south or south-east. The species concerned in these movements consisted solely of Chaffinches, Skylarks and Starlings. On reaching the coast birds usually continued south-east and were sometimes traced, still moving in this direction, up to five miles inland. Occasionally parties of birds turned southward at the coast and fully 80% of a large movement on November 6th did so.

DISCUSSION.

Inter-relation of movements.

It has been shown that a large number of migrants arriving from the east, and occasional parties from the north-west, turn southward at the coast. These birds formed a large part of the coastal stream of migration and may have formed the whole of it. Although a

coastal movement only was observed on the north Lancashire coast, this may well have had its origin from birds turning southward further up the coast. The passage of birds along the coast usually commenced immediately after dawn and about an hour before movement from the other directions. At first sight this would suggest a separate origin, but the early occurrence indicates that the movement consisted of birds which had arrived on the coast during the night.

Influence of the Weather.

Our knowledge of the influence of the weather and wind direction on diurnal migration is still confused and observations are often contradictory, e.g., Lack (1952) saw less migration with a strong wind than with a light wind, and less in heavy rain; Holt (1950) saw large movements with strong winds and heavy rain. The present observations also show large movements with strong winds (see Table 1, October 21st, November 6th) and with light winds (Table 1, October 19th, November 14th). While movements thus occurred under diverse conditions, in general the observations showed that less migrants were seen when the wind tended to be behind the birds. However, on November 3rd, a very large movement from the east occurred during a north-east wind. It is interesting to speculate on what the strength of this movement might have been had the wind been westerly.

Goodbody (1950) showed that the direction of the wind determined the reaction of migrants reaching the south coast of Ireland, birds turning to move along the coast into the wind. There was no evidence that the reactions of migrants at the coast were influenced by wind direction during the present observations (see Table 2).

Reactions of Migrants at the Coast.

Tinbergen (1941) and Van Dobben (1944) have shown that Starlings and Chaffinches travelling W. to W.S.W. across the Netherlands turn to the south-west at the coast and form a concentrated coastal stream of migration. It was thought that the present observations would show that birds approaching the south Lancashire coast from the east behaved similarly. In fact, a large proportion of such birds did turn along the coast, but it has been shown that an equally large proportion continued out to sea. It was considered that the continental birds were moving toward winter quarters in the south-west, i.e., England and Ireland, and that their reaction was a compromise between their reluctance to fly over the sea and their required direction. On the Lancashire coast migrants might be considered to be moving towards winter quarters either in the west, i.e., Ireland, or in the south-west. It could thus be explained that birds whose destination is west, would find a S.S.W. or S.E. direction unacceptable and continue across the coast. This explanation has several drawbacks. The observation concerning Redwings on October 12th and many similar ones not detailed suggest more that the reactions of birds at the coast in this area are not confined to

any set pattern.

Van Dobben (*loc. cit.*) further showed that migrants which turned south-west at the coast, continued along it until there was a bend to the east, when they moved out to sea. The present observations again support these findings in part only. The coast line bends to the east at the mouths of the three large estuaries; here a large proportion of birds moving down the coast did turn out to sea, but many others turned up the estuaries. Again, parties of birds were frequently seen leaving the coast long before there was any suggestion of a bend.

The fact that many of these migrants arrive from the east, turn S.S.W. along the coast and then south-east up the Mersey, whilst others turn seaward all along this course, again suggests that parties of migrants react individually, possibly according to the degree of their aversion to flight over the water.

Origins and Destinations.

The origin of the coastal movement has been considered above. The origin of birds arising from the north-west is obscure, if the line is traced back it reaches the Isle of Man or Wigtown and the birds may have come from these areas, but it is also possible that they were birds which had moved out to sea from the north Lancashire coast and turned back to the east at sea. It may reasonably be supposed that birds arriving from the east had travelled across the country from the east coast.

As regards the destinations of all these birds there is little more evidence. Most of the birds which take off out to sea probably join the North Wales coast. Wood (1950) has collected a number of notes showing movements along the West Wales coast, and records that A. W. Boyd has observed an immigration of Chaffinches from the north and east, at Llandudno on the North Wales coast. Of the birds which continued to move along the coast and along the banks of the estuaries, some may have eventually reached the North Wales coast, but others probably continued inland. Behrend, watching at Burton on the Dee estuary, did not find that birds showed any tendency to cross the river, although it is less than a mile wide at that point.

SUMMARY

Diurnal migration of passerines on the south Lancashire coast is described. Movements were very complex but could be resolved into three apparently separate streams of birds arriving from different directions, viz :—a stream of birds following southward along the coast; a stream of birds from the east; a stream of birds from the north-west. Continuity of movement along the coast was established by observations made on the north Lancashire coast and on the Wirral peninsula. Reasons are given for the opinion that the coastal movement is formed mainly from birds which come from the east and turn southward at the shore.

The varied and complicated reactions of migrants to the coast and the irregularities of its outline, lead to a conclusion that birds did not behave according to any set pattern but more probably according to the degree of their aversion to flying over water.

Migration occurred during diverse weather conditions and there was no conclusive evidence that it was greatly affected by the direction of the wind, although it may be seen that, in general, smaller numbers of migrants occurred with following winds. Similarly, there was no satisfactory evidence to show that the reactions of birds at the coast were decided by wind direction.

Certain observations indicate that migration is continued during the night.

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NOTES.

Easterly migration of Wigeon from the Mersey.—Mr. R. H. Allen has forwarded to us a report by Mr. G. Rutter on an interesting movement of Wigeon (*Anas penelope*) which he watched at the mouth of the River Weaver on the evening of April 2nd, 1952. From 6.15 p.m. till dusk there was a series of flights—16 to 20 in all—of Wigeon, involving a total of about 2,000 birds, the largest flight numbering at least 400 and most of the rest containing about 80. The Wigeon flew E. to S.E. from the Mersey, taking the same direction as the Sheld-Duck take at the time of their moult-migration in July; as with the latter a few birds returned after setting off. A light N. to N.W. wind was blowing at the time.

Lesser Yellowlegs in Argyllshire.—In an Editorial summary of some 1950 records of Lesser Yellowlegs (*Tringa:flavipes*) beneath a note entitled "Yellowshank in Cheshire" (*antea*, vol. xlv, pp. 332-333), very brief mention was made of a bird seen in Argyllshire by Mr. A. J. Bruce. Unfortunately, however, the date and locality

were wrongly quoted. The correct details are as follows: On March 3rd, 1951, Mr. Bruce came across an unfamiliar wader on the northern shore of Loch Creran, Argyllshire, and in spite of its extreme wariness at first he was able, during a period of more than an hour, eventually to obtain views down to about 15 yards. His detailed description of appearance and behaviour confirm his identification of it as a Lesser Yellowlegs, apparently only the third record for Scotland. The bird was "of the same order of size as a Redshank (*T. totanus*) . . . and its very graceful build and long legs were the first features to be noticed"; the bill was fine and dark, and possibly very slightly upturned. The head and sides of the breast were light grey, and the wings and back a dark grey-brown. The front of the neck, the belly and the flanks were a clear white. The legs were yellow and in flight protruded well beyond the tail. In flight it showed a uniform dark grey-grown upper surface to the wing; the lower surface also appeared to be rather dark, but not as dark as in the Green Sandpiper (*T. ochropus*), of which this bird was reminiscent. When it was flushed the rump, tail-coverts and tail gave the impression of being quite white, but on occasion darker central tail-feathers were noticed and the posterior tail-coverts appeared darker as a transverse bar. Mr. Bruce adds that "The only feature in which the bird as seen was found to differ from *The Handbook* descriptions is in the statement in the *Supplementary Additions and Corrections* that the white of the upper tail-coverts is not prolonged up between the wings as a wedge. I definitely received the impression of its doing so to a certain extent. I have however since examined a number of skins and I find that the upper border of the white is very variable and in many cases there is no definite transverse line of demarcation." In spite of being flushed many times it did not leave the bay where it was first found (on a sandy shore strewn with small rocks and weed) and it was still there when the observers left. It fed on the sand and at the water's edge, sometimes wading in the shallows. It picked its food from the sand or weeds and did not probe, occasionally making sudden rushes and snapping its bill.

Unusual nesting-site of Dipper.—On April 15th, 1952, in Goredale Beck, Malham, Yorks, we found the nest of a Dipper (*Cinclus cinclus*) on the top of an isolated boulder well out in the stream (plate 3, left). The nest had the, to me, novel quality of being very nearly rectangular—its approximate dimensions of 10 inches by 11 inches by 7 inches giving it the appearance of a depressed miniature haystack. The exterior was composed almost entirely of *Hypnum cuspidatum*—the commonest growth along the stream—and the nest was well seated on the flattish apex of the stone (plate 3, right). The stone itself stood some two feet out of the water and was two to three feet from the nearest part of the bank. The accompanying photographs were taken by E. J. Wenham on a subsequent visit to the nest.

Although R. J. Ussher records nests of the Irish Dipper (*Cinclus cinclus hibernicus*) "on a rock in mid-stream," few such nesting-sites appear to have been noted elsewhere in Britain.

T. B. MASON.

LETTER.

THE USE OF DELFWARE POTS AS NESTING-HOLES FOR HOUSE SPARROWS.

To the Editors of BRITISH BIRDS.

SIRS,—According to James Rennie (*The Architecture of Birds*, 1831) "pots of unglazed delfware of sub-oval shape, with a narrow hole for an entrance, were fixed on the walls of houses several feet under the eaves." R. S. R. Fitter, quoting Rennie (*London's Birds*, 1949, p. 39) adds: "Nobody seems to know what was the purpose of these pots." Rennie himself did not support the suggestion that they were used to protect the walls from attempts by sparrows to enlarge holes in the mortar for nesting purposes.

It seems probable that these pots were introduced from Delft where they were manufactured certainly at the time of Aldrovandi about 1600 and presumably some time earlier. In Delft, a town whose welfare depended to a great extent on brewing, sparrows were regarded as vermin and the pots provided accessible nesting places from which nests and young could easily be destroyed. It is clear that the pots were also used in England as a means for controlling numbers. Walpole-Bond (*History of Sussex Birds*, 1938, vol. i, p. 118) states: "Our forebears in parts of Sussex, up to at any rate about the year 1860, made a regular custom of affixing to the eaves of dwellings earthenware bottles, so constructed that the young sparrows could easily be come at and then destroyed."

It would be interesting to know when this method of keeping down the number of sparrows was first introduced into England from the Netherlands and how long it was in use.

W. MEISE.

Zoological Museum, Hamburg.

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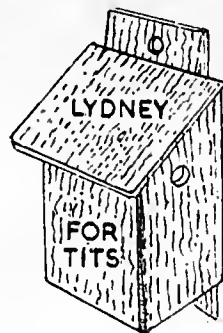
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BRITISH BIRDS

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THE BEHAVIOUR AND BREEDING BIOLOGY OF THE HEBRIDEAN WREN.

BY

EDWARD A. ARMSTRONG.

THE Hebridean Wren (*Troglodytes t. hebridensis*) was described by Meinertzhagen (1924) and details of the plumage were published by Witherby (1928). As Meinertzhagen acknowledged, some of its distinctive characters had long been known. Peel in 1901 and Harvie-Brown in 1902 had remarked that Outer Hebridean wrens were darker than mainland birds. Harvie-Brown regarded them as intermediate in this respect between the wrens of St. Kilda and those of the mainland. He commented: "Here is an opportunity for some investigator who likes to make out 'new species' to minutely describe and claim it!" During a short visit to Lewis and Harris in June, 1951, I was able to make some observations on the behaviour of this bird.

APPEARANCE AND GENERAL BEHAVIOUR.

T. t. hebridensis I found to be less readily distinguishable from the European Wren (*T. t. troglodytes*) than the other races which I have had the opportunity to observe carefully in the field—*islandicus*, *zelandicus* and *hirtensis*. The upper-parts appear darker than in *T. t. troglodytes* (Meinertzhagen, 1934), the breast rather more buff and the barring on the flanks somewhat more conspicuous. The tails of two or three seemed long relative to the size of the bird, but presumably this impression was due to some peculiarity in their attitudes as it is not borne out by skin measurements. The Hebridean Wren has not the robust, stocky appearance of the Shetland Wren. It is no less spry and lively than the European Wren and is constantly on the move here and there, poking into crannies in turf banks, piled boulders, heather tufts and so forth. Males (in June) fly up to rocks, walls, fence posts or twigs to sing a few phrases now and then, but females are much less conspicuous. Although Hebridean Wrens can scarcely be called shy they are wary and less tolerant than Shetland Wrens of the presence of human beings whether at the nest or away from it. None the less they will usually approach the nest when an unconcealed observer is only ten or fifteen feet away and grow bolder as they become accustomed to the intruder. Best, Turner and Haviland (1914) exaggerate their timidity, remarking that they found them "much shyer than the mainland wren." Beveridge (1918) is even more emphatic, calling it "the shyest of creatures." At the nest females are apt to be bolder than males, due probably to the greater strength of the parental drive. However, I tried to photograph a female at

the nest without a hide as I had succeeded in doing with a Shetland Wren, but failed. When alarmed away from the nest the birds squat and hide in low undergrowth and along the courses of streams, as described later.

DISTRIBUTION AND HABITAT.

The Hebridean Wren is commoner than a casual observer might suppose and is widely distributed, being found on suitable islets, such as some of those in the Sound of Harris, as well as on the principal islands. In 1884 MacRuray described it as an abundant and permanent resident. It is not known whether the population shows considerable fluctuations like the Shetland, St. Kilda and Fair Isle Wren populations (Armstrong, 1953; Williamson, 1951b) but probably the Hebridean Wren is no less vulnerable than other races to severe winter conditions. We noticed it on the coast below low cliffs, on rough heather-clad hills and boulder-strewn screes, among peat hags, along burns, by roadside cottages and in woods. There were wrens at regular intervals along the bare hill-side in Rodel Glen but not on the other side of the glen across the road in the stretch of sparse, weather-beaten trees. However, Dr. Campbell tells me that he saw a family there in July, 1938, and several wrens among the trees in May, 1939. We found two nests on the outskirts of woods, one in Harris at Horgabost and another in Lewis in the Castle grounds at Stornoway. Both were built under turf banks although there were other eligible sites available among neighbouring trees and bushes. The Stornoway nest was in an area where the bird had a choice of sites in dilapidated stone buildings as well as in trees only a few yards away. In such a habitat a European Wren would hardly have built in the cavity of the bank chosen by this bird. Mr. James Matheson tells me that on July 5th he found another nest in the Castle grounds situated in the river bank. Apparently *T. t. hebridensis* has adapted itself to an open environment to such an extent that its normal choice of nesting-place differs from that of *T. t. troglodytes*. Dr. Campbell, who considers it typically a bird of the heather, recalls that he has never found a nest in ruins or dilapidated buildings. Such sites are chosen by the Iceland, Shetland, St. Kilda and European races (Armstrong, 1950a, 1952, 1953, in press).

Hebridean Wrens feed along stone dykes in areas in S. Uist and elsewhere and favour scrub-covered islets in lochs, though they are by no means confined to these (G. K. Yeates, *in litt.*: J. W. Campbell, *in litt.*). They show a preference for the neighbourhood of water, such as streams, however small, and marshy ground where food is more plentiful than in dryer areas. Many territories are situated along the coast. The Hebridean Song Thrush (*Turdus ericetorum hebridensis*) and the Wren are often found together. In the "forest" of North Harris a Wren was noted singing at a height of approximately 500 feet on a steep scree and a Thrush at about 600 feet.

The Hebridean Wren has accommodated itself to open environments better than the European Wren and approximately as well as the Shetland Wren, but does not breed in areas of sparse vegetation such as the *traigh* nor in areas of low homogeneous vegetation, such as *Scirpus*-covered "flow" country (Campbell, 1938). It is at home on cliffs, like the Færoe Wren *T. t. borealis* and the subspecies of St. Kilda and Shetland. On Mingulay, for example, "any deep indentation in the line of the cliffs holds a singing Wren" (Sergeant and Whidborne, 1951). The European Wren is plentiful in Sutherlandshire on some precipitous parts of the coast (Pennie, 1951) and is found "in the very wildest places on the hill . . . all along the burn-sides up to their sources, even in winter" (Buckley; 1881). Thus local populations of this race may achieve some adaptations approximating to those of the North Atlantic insular races.

TERRITORY.

Hebridean Wrens' territories are relatively large and comparable in size with those of the Iceland and Shetland Wrens (Armstrong, 1950a, 1952). Two males divided a wood of 32 acres between them—though it is not certain that they patrolled the whole of it. Elsewhere, on a heather-clad hill a bird sang from a number of places suggesting a territory of about 12 acres. In Rodel Glen the males along the hill-side were at distances of about 250 yards—approximating to the distance commonly separating Shetland and St. Kilda Wrens on cliffs (Harrisson and Buchan, 1934). As the birds were restricted by each others' territories only along the glen it was impossible to estimate how far they ranged in the undefended areas at right-angles. Probably, as with other races, the area patrolled may vary within wide limits.

SONG AND CALLS.

The Hebridean Wren's most distinctive characteristic is its song. To my ear the phrase differs more from that of the European Wren than that of other British races, *T. t. islandicus*, *T. t. koenigi* of Corsica or, possibly, *T. t. kabyloorum*. Its most remarkable feature is a high-pitched, sibilant and slightly metallic trill. Occasionally there are two prominent trills and when a second trill occurs towards the end of the phrase it seems about an octave higher than the final notes. The preliminary notes of the song reminded me of the beginning of the song of the Willow Warbler (*Phylloscopus trochilus*) and the trill was reminiscent of the utterance of the Grasshopper Warbler (*Locustella naevia*). The preliminary notes leap up and down in an animated way and the song impressed Dr. Westall and myself as being more interesting musically than that of the European Wren. Duncan (1929) speaks of the Hebridean Wren's song as "more of a ripple and less disjointed than that of the mainland Wren." This appears to be a reference to the fluent, rather twittering, warble which constitutes much of the phrase. We

heard *T. t. hirtensis*, *hebridensis* and *trogloodytes* (in Scotland and England) on successive days and were impressed by the musical dullness of the songs of *hirtensis* and *trogloodytes* compared with *hebridensis*. The latter's phrase seems higher pitched than that of *trogloodytes* and heard in woodland it has a reedy timbre. The song of the European Wren sounds more repetitive and shrill than that of either of the other races.

The duration of the phrase is commonly about four seconds but phrases with the double trill may last 5-6 seconds. As with the songs of other Wrens there is variability in duration, especially when a bird is not singing a constant series of territorial songs. If he is interested in a female very short subdued phrases of hardly more than a note or two may be heard or, on the other hand, exceptionally long phrases. The volume also varies greatly but the normal utterance seems softer than that of *T. t. trogloodytes*. The description by Best, Turner and Haviland (1914) of the song as "particularly loud and sustained" does not accord with our observations. As Stornoway woods provide a setting similar to that in which the European Wren is commonly heard we were able to form opinions uninfluenced by the effect of rocks and open spaces in amplifying sound. In regular territorial song there are 4-5 songs per minute, but once I heard double that number during half a minute. None of the birds kept up the sustained reiteration of phrases characteristic of European Wrens in good song, especially in the early morning, which they were still uttering in England in late June. In the Hebrides the spring had been exceptionally late, as in England, but, in contrast, had been very dry. Probably more regular song was uttered shortly after dawn by the Hebridean birds but we were unable to make notes before 08.30 G.M.T. The following series of pauses between songs is typical:

TABLE I.
HEBRIDEAN WREN.

PAUSES (IN SECONDS) BETWEEN SONGS. 8/6/51. 11.53 G.M.T.
6, 13, 14, 3, 12, 12, 5, 42, 32, 11, 14, 6, 9, 6, 7, 9, 8, 7, 13, 8, 7.

This Wren had young in the nest which he fed occasionally but he was stimulated to sing every now and then by the songs of two neighbouring birds. Undoubtedly reduction in song output tends to occur when the male is feeding nestlings. Another male, more active at the nest, was never heard to sing during 4½ hours watching, apart from occasional subdued warbling when the female was near. The rather greater prominence of song in the life of the European Wren is correlated with its polygamous tendencies.

The songs of a Wren tend to arouse his neighbours and counter-singing occurs similar to that of *T. t. trogloodytes* (Armstrong, 1944). Hebridean and St. Kilda Wrens apparently sing in flight more frequently than European Wrens. Song in flight is particularly characteristic of unmated birds and is rare among Wrens feeding

young in the nest. I would suggest that the term "flight-song" be used of song uttered on the wing expressive of unusual stimulation or excitement, but not associated with specific display movements, as when a Song Thrush (*Turdus ericetorum*) sings in flight, but "song-flight" should be confined to a form of territorial or epigamic display and utterance. Song-flight is most typical of birds of open habitats. The first state towards acquiring this form of display would be an accentuation of flight-song. Perhaps the flight-song of the Hebridean Wren is tending to become song-flight.

Courtship song uttered when the male is close to the female is delightfully soft and sweet but, as already mentioned, may vary greatly in duration and volume.

According to Campbell (1938) winter song is frequent, suggesting that territory may be retained in winter.

The Hebridean Wren is less prone to utter call-notes than *T. t. troglodytes* and in this resembles *T. t. zetlandicus*. Kearton (1897) commented on the few calls heard from St. Kilda Wrens and although other observers mention calling similar to that of the European Wren it seems that, on the whole, the St. Kilda Wren is less vocal. The silence of Hebridean Wrens interrupted while feeding nestlings was remarkable. In general the notes we heard were not markedly distinct from those of the European Wren. Double or multiple ticking notes resembling the noise made when two small stones are rapidly knocked together are uttered by the male, especially when accompanying fledged young. If, as is possible, the female utters such notes it is only rarely. The female with fledged young utters a "chitter" alarm and the young also give a slightly higher-pitched version when uneasy. This call is first heard from young European Wrens when they leave the nest. Indeed they utter it as they fly out if disturbed prematurely. It is also uttered by young Shetland Wrens and I have heard what seemed to be an incipient version of it while they were in the nest. I never heard it uttered by four young European Wrens reared from the nestling stage and kept for two months at the Cambridge Ornithological Field Station, even when being caught for experiments or presented with a stuffed Tawny Owl (*Strix aluco*) or a fur "model" to represent a cat. Both in the nest and out of it young Hebridean Wrens, like the young of other races, utter high-pitched squeaks which serve to attract the food-bearing parent to the chicks and also enable the members of the party to keep together. The ground-predator alarm call of Hebridean Wrens is mentioned later.

DISPLAY.

Nest-invitation. About 14.30 G.M.T. a male was heard singing in Stornoway woods. From time to time he perched with tail cocked, singing and looking intently downwards, alert for the appearance of the female who was in the dense undergrowth. Sometimes he

sang a short, excited snatch and once he sang in flight. He worked down the hill from perch to perch in the trees during the next quarter of an hour and then, after a loud, complete phrase followed by a brief snatch, flew about fifteen yards to the nest, which was under an overhanging turf bank by an old mill. He stayed $1\frac{1}{2}$ minutes inside and sang shortly after flying out. This was obviously a rather perfunctory and abbreviated version of the nest-invitation display as the female did not put in an appearance near the nest. The performance suggested that the full procedure may be more similar to the nest-invitation display of the Shetland Wren than that of the European Wren (Armstrong, 1944, 1952). In view of the frequency of the flight-song by the male Hebridean Wren it would seem that in this context it is stimulated by the female's presence and has the function of attracting attention to the location of the nest. The distinction between such behaviour and true song-flight is slight. The direct flight with song to the nest, rather than the approach from twig to twig with quivering wings characteristic of *T. t. troglodytes*, is an adaptation to the usual open habitat of the Hebridean Wren as distinct from wooded surroundings. Thus it seems that the nest-invitation display characteristic of the European Wren may have become modified and adapted to open habitats.

Epigamic display. Pre-nuptial display, apart from the procedure just described, was not observed, but near one of the nests at which the nestlings were fed by the male he displayed occasionally in a manner which suggested that the pre-nuptial display is, in the main, similar to that of *T. t. troglodytes* and the other races whose display has been described (Armstrong, 1950a, in press). The most complete display occurred while I was photographing the nest. One of the birds had been uttering alarm notes, then the male perched on a post, singing a subdued, brief strophe, quivering his half-opened wings above the female who was perched lower on the fence about eighteen inches away. In acknowledgment she drooped her wings slightly. Possibly this display and related displays by birds of other races elicited by the presence of an observer at the nest should be regarded as displacement-display (Armstrong, 1950b). This bird on two previous visits, when the female was absent, raised and gently waved his half-open wings a few times. His display was apparently a displacement-activity due to seeing me, but on a subsequent visit he perched with half-open, quivering wings, uttering three or four low, sweet notes just after the female had flown from the nest. On the next occasion his mate appeared as he left and he emitted a few twittery, subdued notes in flight. Thus it seemed that the excitement caused by an intruder near the nest accentuated the tendency to epigamic display, the threshold of which was already low. In comparable situations involving alarm or excitement birds of many species will sing (Armstrong 1947). Display in general, whether vocal utterance or visual posturing, appears to be, to a great extent, the outcome of conflicting

drives and such incidents illustrate its probable origin as a by-product of the clash of incompatible impulses, which, in the course of evolution, has attained adaptive value by acquiring ritualized signal functions.

Aposematic display. When I placed a mounted Wren in a posture somewhat resembling that of a female soliciting coition eighteen inches from the nest the male hopped around it at a distance of a few inches with partly spread wings and fanned tail—an attitude which probably expressed suspicion and threat. The female's reaction was a milder form of the same posturing. She hopped about for a minute, crouching while eyeing the mount closely. On her second visit she flipped her wings rapidly out and in. This reaction seems to be a generalized excitement reaction.

NEST-SITE AND NEST.

The three nests which we found were under turf banks. Two of them were so situated that the entrance faced outwards, but the third, in Stornoway woods, was in precisely the type of situation typical of many Shetland Wren nests, apart from being among trees. The nest was built in a cavity of the overhanging turf facing the bank so that it was extremely well hidden. All three nests were within a few yards of streams. According to Campbell nests are often found in crevices among rocks as well as in long heather, gorse and ferns. A newly-fledged family frequented a dilapidated thatched building and stone walls near a croft, but the nest was not discovered. Although Hebridean Wrens breed near crofts they apparently find such places congenial on account of the insect food available in the long herbage rather than because of finding suitable nesting-sites in buildings.

The three nests examined were in recesses so that the bird did not have to shape a complete dome but had packed material into the cavity. Nests in heather may be fully fashioned. The entrance to one nest was large—two inches across. This nest was constructed mainly of withered grass; brown pine needles were used as reinforcement for the threshold. The other two were almost entirely of withered grass and the Stornoway nest had a small, neat aperture which was, like the entrance to the nest just mentioned, oval rather than circular. The nests were neater than the St. Kilda Wren's nests I have seen. Their appearance suggested that they had been built with damp material.

To what extent multiple nest-building occurs is not known, but the absence of records of "cock's nests" and the tendency for the male to feed the young, which would reduce the time and energy available for nest-building, suggest that the male builds fewer nests than the male *T. t. troglodytes* (Kluijver *et al.*, 1940), *hiemalis* (Bent, 1948) or *pacificus* (Bowles, 1899) and approximates in this respect to the behaviour of *zelandicus* and *hirtensis*. The only observation

consistent with the building of more than one nest by the Hebridean Wren concerns the nest in Stornoway woods. Although, as already described, the male was seen enticing a female to it in mid-June it was never occupied. The male may have had another nest available.

LINING.

The lining, which is placed in the nest by the female, is mainly of feathers, mostly white and grey, these being most readily available. A feather about $2\frac{1}{2}$ inches long, probably from a Heron (*Ardea cinerea*), protruded partly across a nest entrance while a female brooded the chicks. As she departed she seized it and carried it away. Female European and Shetland Wrens will bring lining material to the nest when the eggs are well incubated and European Wrens may even bring material when the young are nearly fledged, but this bird's behaviour shows that at this stage a feather may have merely nuisance value. A female Southern House-Wren (*Troglodytes musculus*) in Surinam has been seen removing feathers from an old nest in order to lay in it (Haver-schmidt, 1952). Males of various races remove feathers from near the nest (Armstrong, 1952).

EGGS.

The eggs are dull white, lightly spotted with brownish red, mainly at the large end. In the two nests containing young there were respectively five and six. Mr. James Matheson, head keeper of the Stornoway Castle grounds, tells me of clutches of ten and seven eggs respectively which he found on June 25th and July 5th, 1951. Such clutches are probably exceptionally large. It is sometimes difficult to ascertain the number of eggs in a nest exactly. I regret that I was unable to check these counts personally.

INCUBATION AND BREEDING SEASON.

The female incubates, but the period has not been determined. Incomplete data for one nest indicate not less than fourteen days.

On June 6th we found a brood which had probably left the nest a day or two earlier; on June 7th a nest (at Horgabost) with young about five days old and on June 9th another with nestlings which seemed a day younger. On June 14th the male mentioned above was seen inviting a female to an unlined nest. Another nest in Stornoway woods contained a full clutch on July 5th. It was deserted later. In yet another nest there hatching took place on or about July 9th. These observations suggest that, as is apparently true of Shetland and St. Kilda Wrens, the Hebridean Wren may "spread" its nesting. Mr. Seton Gordon tells me that his observations are consistent with this. Unfortunately to what extent this holds cannot be known until it is ascertained how frequently second broods occur. It is doubtful whether they are as regular as among European Wrens.

NESTLING PERIOD.

The newly-hatched nestlings found by Mr. Matheson in the nest on July 9th were still there, but on the point of leaving on July 29th. There is some evidence that the nestling periods of some of the northern insular races may be rather longer than the nestling period of the European Wren (Heath, 1920; Armstrong, 1952) but data on which to base a definite opinion are lacking. If such be found to be the case it might be correlated with less predation pressure and greater difficulty in obtaining sufficient food for the young.

The male helped his mate to feed the chicks at both nests at which observations were made but was less bold and assiduous.

The tempo of feeding during observation periods at the two nests is shown in Table II.

TABLE II.

TEMPO OF VISITS TO HEBRIDEAN WREN NESTLINGS WITH FOOD AND FREQUENCY OF REMOVAL OF FÆCES.

<i>Site</i>	<i>Date</i>	<i>Time of count (G.M.T.)</i>	<i>Number of nestlings</i>	<i>Number of visits with food</i>	<i>Number of times fæces removed</i>
HORGABOST ...	7/6/51	12.47-13.47	5	12 (♂ c. 2)	3
„ ...	„	13.48-14.48	„	9 (♂ c. 1)	1
„ ...	„	14.49-15.04	„	7 (♂ c. 1)	1
„ ...	8/6/51	08.45-09.45	„	17 (♂ c. 3)	4
„ ...	„	10.30-11.12	„	10 (♂ c. 2)	3
„ ...	„	12.37-13.37	„	11 (♂ c. 3)	1
SCARISTA ...	10/6/51	10.42-11.42	6	9 (♂ c. 3)	2
„ ...	„	11.43-12.43	„	8 (♂ c. 3)	3

N.B.—VISITS BY THE MALE, INDICATED BY ♂, ARE INCLUDED IN THE TOTALS. BEFORE THE BOUT OF ACTIVITY AT 14.49 ON JUNE 7TH THERE HAD BEEN NO VISIT TO THE NEST FOR 31 MINUTES. AT 13.30 THERE WAS AN INTERMISSION OF 22 MINUTES.

The Horgabost nest was in what appeared to be an exceptionally favourable situation in regard to availability of food as it was on the edge of a wood, a few yards from a waterfall and near a marshy area. Comparisons of the feeding rates of different species and races of wren appear elsewhere (Armstrong, in press) but it may be mentioned here that a pair of Shetland Wrens made 21 visits in an hour early in the morning to a nest containing five young of about the same age as the Hebridean Wren nestlings which received 17 visits in an hour, but the male Shetland Wren was working approximately as actively as his mate. A female European Wren working alone averaged 19 visits per hour throughout the day to four young six days old and 31 visits per hour to chicks on their 14th day. During a peak hour she made 43 visits (Whitehouse and Armstrong, in press). Other data confirm that one European Wren can maintain a feeding tempo greater than has been recorded of these other races when the number and age of the chicks is comparable.

The Scarista Wrens never went upstream where rough ground soon merged into moorland. They searched for food mainly in a weedy garden enclosure 20 yards away and downstream in a pasture some 60 yards off across the road. Once I saw the female foraging under the wall by the roadside. I noticed the female at the other nest securing prey some 60-70 yards from the nest on a marshy patch but she sometimes went in the opposite direction. These distances should not be assumed to indicate the maximum foraging range. On two occasions a bird, after leaving the nest, noticed an insect a few feet away and took it to the nestlings. The female which I watched hunting for prey in marshy ground 60 yards distant from the nest poked here and there under tussocks and in crannies, securing two insects in two minutes.

At the Horgabost nest I noted the Wrens bringing the following items of prey—a damsel fly, daddy-long-legs, various unidentified insects, apparently Diptera or Hymenoptera, three brown caterpillars and three or four brown, buff, or brown and buff moths. During two hours and eighteen minutes the Scarista wrens brought altogether four moths, twelve daddy-long-legs (*Tipulids*), twenty-six winged insects about half-an-inch in length and one spider. There may be a slight margin of error so far as the winged insects are concerned. I have never known so much large prey brought to a European Wren's nest but the diet of Shetland Wren nestlings is rather similar (Armstrong and Thorpe, 1952). All the moths were cryptically coloured. Carrick (1936), however, showed that European Wrens capture non-cryptic animals more readily than cryptic.

Different types of organism may be brought in one beak-load, e.g., a caterpillar and a winged insect. Once a male came with two daddy-long-legs. After delivering them he noticed a large brownish moth about 20 feet from the nest. He pecked at it several times, mauled it on the ground, pecked it again repeatedly and then took it to the young. At the other nest the female brought a large moth of varied shades of brown. She tried five or six times to induce the chicks to take it and then flew to the ground and savaged it, apparently breaking off the wings or the greater part of them. The chick to which it was then offered accepted and swallowed it. Another similar incident was noted. I have never observed such treatment of prey by European Wrens, though when the young are out of the nest large caterpillars are sometimes macerated by being flogged against a branch. There was no attempt to trim the legs or wings off daddy-long-legs. Once a Wren brought a load consisting of some flies held in its bill and a daddy-long-legs dangling, held only by the ends of a couple of legs.

While the female was brooding the young the male brought food twice in ten minutes. On another occasion he would have done so had he not caught sight of me near the nest. Such behaviour would be exceptional at the nest of a European Wren.

The young Wrens in one of the nests could be heard calling at a distance of 40 yards—about the distance at which European Wren chicks can be heard in favourable conditions. They begged and cheeped as I was extracting them from the nest. Pin feathers were sprouting on the wings and there was a tuft of down on their heads, but otherwise they were almost naked. At the other nest at Scarista one bird uttered a tiny squeak and a kind of chirrup as I was lifting out the fifth nestling. These youngsters were clothed a little on the crown and along the back and had sprouting wing feathers.

When at the nest holding food a Wren sometimes uttered a very quiet but rather harsh, high-pitched note, usually quickly repeated twice or several times. This was evidently a signal for the young to receive food but occasionally it was uttered after feeding as if to stimulate defæcation. Attentive observation was necessary to make sure that these squeaky calls were uttered by the parent and not by the chicks. Somewhat similar notes, as well as a sibilant whisper-song, are uttered by female European Wrens at the nest, and occasionally by males during territorial altercations. Males may utter such notes at the nest, but I have no definite record of one doing so. A female removing fæces occasionally wiped off the sac on a twig.

THE FLEDGED YOUNG.

The newly fledged young are adept at creeping about among crevices and through interstices in old walls. From the way in which a family keeps in touch towards evening it seems likely that the young roost together.

PREDATOR REACTIONS.

The Hebridean Wren, when frightened, commonly seeks refuge in a small gully among the peat hags, tiny runnels, streamlets overhung with heather and other such places, squats there and ultimately hops and creeps through whatever cover there is and appears some yards away. Probably it was due to having noticed this that Beveridge (1918) referred to "this bird's retiring nature and its habit of taking cover at a moment's notice." A Wren chased from its squatting place will flit low over the ground, drop down a few yards off and squat again. It will repeat the ruse several times if the terrain is suitable, as, for example, where a trickle of water flows down rough pasture. This procedure is characteristic of males and females alike and, so far as I am aware, has not been noted in any other race of *T. troglodytes*, although, of course, individuals of all subspecies are apt to retire to any available cover when alarmed. It is an ecological adaptation appropriate to a particular kind of habitat and would seem to be correlated with alarm caused by a large potential ground predator or intruder

rather than a small mammal or bird of prey, though there is no evidence that the Hebridean Wren was ever persecuted by man or any other large mammal.

Experiments with a dark brown fur tippet to represent a ground predator were somewhat inconclusive, as such experiments are apt to be. At one nest the female hopped around for a few minutes in an excited and suspicious way. At the other the female reacted by uttering regular *kreeee* calls—very like those uttered by both sexes of the European Wren when a furred predator is near. She continued to call in this way for a short time after I removed the mount and while I was photographing the nest. In similar experiments Shetland Wrens did not utter the *kreeee* note (L. S. V. Venables, *in litt.*).

PAIR BOND.

The information available suggests that Hebridean Wrens, unlike European Wrens, are usually monogamous. Both parents commonly feed the nestlings. There is a correlation between polygamy in Wrens and habitats in which food is readily available. The races inhabiting relatively bleak areas tend to be monogamous but where *T. t. troglodytes* is resident in garden-woodland areas it tends to be polygamous. The observations of the tempo of feeding young and the types of food brought to the nests of Hebridean Wrens support this view. Elsewhere I hope to discuss the evidence that availability of food has an important bearing on the share taken by male birds in incubating and tending the young.

DISPERSAL.

Probably there is a post-breeding spread-out similar to that noted in other races of the Wren. In autumn and winter Hebridean Wrens may be found frequenting boulder-strewn parts of the shore, culverts and other sheltered spots (Clyne, 1915). A considerable number of reports, mainly in the *Scottish Naturalist* from the Flannans, Monach and Barra Head show that Wrens are reported in autumn, winter and early spring in isolated places where they do not breed. No critical examination of such birds has been conducted to determine to which race they belong. Thus it is not known to what extent Hebridean Wrens ever make long journeys but the evidence for other races suggests that on islands Wren populations tend to be sedentary. The distinctiveness of the Hebridean Wren's song is alone sufficient to prove that the race cannot be much diluted by immigrants from the mainland. Williamson (1951a) has shown that the Wrens of Fair Isle have distinctive morphological features although separated by only 25 miles from the Shetland stock. He cites as evidence of the importance of water as a barrier between insular wrens the alleged inability of *T. t. alascensis* of the Pribilof Islands to cross the 27 miles between St. George Island, where it is known to breed annually, and St. Paul Island (Bent, 1948). This example lacks cogency, as Dr. Karl

Kenyon (*in litt.*) informs me that he often finds a few Wrens on St. Paul—sometimes about a dozen—and it may well be that the more severe climate of St. Paul is less favourable to breeding; yet there is, in general, good evidence that insular races of the Wren are mainly sedentary.

SUMMARY.

1. The behaviour and breeding biology of the Hebridean Wren are described from observations made in the field during June, 1951.

2. The song of this race is distinctive and some of its intruder-reactions apparently differ from those recorded of other subspecies.

3. In the nature of the pair-bond, nest-site selection and, possibly, the nest-invitation display, behaviour resembles the behaviour of the Shetland Wren rather than that of the European Wren.

4. The Hebridean Wren tends to approximate ethologically to an insular northern type rather than the "continental" type of the European Wren and Winter Wren (*T. t. hiemalis* and *pacificus*).

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A COLLARED TURTLE DOVE IN ENGLAND.

BY

REG. MAY AND JAMES FISHER.

ON July 31st, 1952, one of us (R. May) was given a description of "a strange pigeon or dove" that had been seen in and around the grounds of a hall in the parish of Manton, north Lincolnshire. On July 24th, he visited the area and on this day he heard, but did not see the bird; on July 25th, 26th, 27th, 29th and 31st and August 3rd he saw it well, and on August 7th we saw it together for six hours, with C. J. Fisher and, for part of the time, also S. A. Cox and Edward Keal, the local keeper. May's identification of the bird as *Streptopelia decaocto* (Frisvaldszky) was emphatic since first he saw it; he had the advantage of having become familiar with the species in Milan, Italy, less than three months previously, in company with the Senior Editor of *British Birds* (E.M.N.), C. P. Blacker and Fisher. The identification was confirmed on August 23rd by other Editors of *British Birds* (W.B.A., P.A.D.H. and I.J.F.-L.). Others who saw it include S. van den Bos and Eric Simms; the latter made notes on August 18th-20th and obtained recordings of the bird's voice for the British Broadcasting Corporation.

DESCRIPTION.

The following field-notes are re-arranged from the mass of observations collected, mostly by May (those of others are initialled); the bird was sometimes seen in good light as close as 15 yards, through 8x binoculars; and on August 7th was seen at 60 yards (paced) in an excellent diffused light behind the observers through a 35x telescope.

Size and shape: considerably larger than Turtle Dove (*S. turtur*), but smaller than Woodpigeon (*Columba palumbus*); body about size of that of Stock Dove (*C. oenas*), but with longer tail—and not so "heavy"-looking (J.F.); stance when alert closely resembled that of Woodpigeon with same impression of round and relatively small head, and rather long, tapering neck.

Colour: plumage appeared markedly uniform save for half-collar, darker wings and sides of tail, and white on distal part of tail. Under-parts: breast and belly very pale greyish-white, but appeared olive-buff in some lights ("more buff than dove-grey, but rather indefinitely between the two", in low evening light, J.F.), and becoming lighter on upper breast and throat, which were lightest parts of body. Crown and back of neck: grey, much darker than under-parts. Collar: exact half-ring, black and narrow, round dorsal half of neck; in best view through telescope (J.F.) it was possible to see that black collar had very definite narrow, white lower border, but not possible to detect any white

upper border; the collar was very conspicuous when the dove inflated its throat for singing. Back and upper wing-coverts: grey, with tinge of buff, primaries definitely darker, in fact dark grey. Tail: coverts buff-grey above, darker at sides; distal third of rectrices pure white; above this white the rectrices were contrasting black or very dark grey, the black extending distally further at the outer edge of the tail than in the middle (J.F.).

“Soft” parts: bill greyish-black; eyes red; legs and feet dull red (dark pink, J.F.).

Tail shape: usually closed with sides parallel when in flight, but sometimes slightly fanned (when gaps, or “fingers” showed) in display-flight; in this position appeared very slightly forked (J.F.). In normal position, in flight or at rest, tail-end appeared either as simple right-angle “chop-off” termination (J.F.), or to be very slightly emarginated.

Flight: both of us agreed that its normal flight was direct and straight. It travelled from one spinney to another in easy style with long, strong glides, more like a pigeon than a dove, sometimes with slight hawk-like “fingering” of the primaries (Eric Simms). It did not appear to “fight its way through the air” like a Turtle Dove, and its wing-stroke did not seem to end so far back. Periodically it did a display-flight from one of two favourite perches, one a dead tree at the edge of a spinney, the other the highest bush-top in a large, straggling wilderness of hawthorn scrub. This display consisted usually of a strong flight at c. 200 feet for at least 400 yards and terminated with a slow glide in a wide circle, closely resembling that of a Sparrow Hawk (*Accipiter nisus*), finally facing the headquarters from which it had started, and eventually flying strongly up to it.

Voice: (a) The most common call was given by the dove, usually (but not always) after lowering itself, leaning forward and inflating its throat. The trisyllabic phrase then uttered lasted about a second and was repeated from three to six (usually five or six) times, sometimes finishing without the last syllable. Its timbre and penetrating power (J.F.) was that of a Woodpigeon; indeed it appeared to be somewhat booming and rather reminiscent of an unfinished Woodpigeon’s phrase. It often varied in quality and pitch, but was never confused by any observer with those of the several local Woodpigeons, Stock Doves and Turtle Doves. It used many song-posts, nearly always in conifers, but had two particular favourites (see above) from which, after singing, it would sometimes perform display-flights.

Transliterations of the normal call, made in field-books on the spot, are:

kloo-koo-kuk (R.M.).

kwoo-hoo-cuc (E.S.—and recorded on tape for B.B.C.).

proo-proo’oo-pru (J.F.).

(b) Like most of the genus *Streptopelia*, the Collared Turtle Dove has an alighting call. This was not often heard, but R.M. recorded it four times, E.S. twice and C. J. Fisher once. It is a prolonged, whirring call usually uttered on the wing as it approaches its perch, though E.S. heard it once as the dove took to flight when chased from its perch by a Mistle Thrush (*Turdus viscivorus*). Unfortunately there was no chance to make a tape-recording. E.S. heard it both times as a five-times-repeated:

wirrra wirrra wirrra wirrra wirrra.

HABITAT.

Mr. and Mrs. Hampshire, who live in a cottage by an orchard and chicken-run that were, earlier in the season, the Collared Turtle Dove's favourite feeding-grounds, informed us that the bird arrived in the first or second week of May. For some time after its arrival it fed regularly with the hens at feeding-time. Until its final disappearance at the end of August it continued to haunt the cottages, but as the barley and rye growing in the neighbouring fields ripened, it deserted the chickens for this food-supply. Surrounding these fields on three sides were belts of thorn scrub and poor acid heathery land, planted in spinneys with pines and mixed deciduous trees. The bird ranged about a mile, from the cottage to another chicken-run not far from a moss of ponds and willows, and made much use of the scrub and spinneys for perching and singing.

CONCLUSIONS.

The Lincolnshire dove appears to have been unquestionably an example of *Streptopelia decaocto*, a male persistently declaring the ownership of a territory. The arrival date of the bird, early May, is the same as the usual date for the taking up of territories on the Continent; and the species normally continues at breeding-pitch until autumn, being double-, often treble-brooded.

Hybrids between *S. decaocto* and the domestic Barbary Dove (*S. risoria*)—a close relation—and the Turtle Dove are known. They usually show plumage and other characteristics intermediate between those of their parents. There is no indication that the Lincolnshire bird departed in any way from the plumage and characteristics of a normal *S. decaocto*, except that its underparts, particularly the chin and throat, were rather light-coloured. However, the colour is anyway somewhat variable.

If the Lincolnshire bird was wild, it is the first British example of *Streptopelia decaocto*. In 1947-48 and 1950-51, a certain number of Collared Turtle Doves—*decaocto*, not *risoria* (the latter is a purely domestic bird)—was imported by dealers from India and distributed in Britain. Enquiries by I. J. Ferguson-Lees on behalf of *British Birds* have shown that the nearest such dealer to Manton is one at Pontefract in Yorkshire, 32 miles away. However, there is no evidence that any of these Collared Turtle

Doves has escaped from captivity; and letters asking for information about any escape or possibility of escape which for some time now have been before the readers of the *Avicultural Magazine*, *Cage Birds* and other periodicals have produced nothing, nor have articles in the *Manchester Guardian* and *Picture Post* and several appeals for information on the radio.

The nearest place in Europe occupied by the Collared Turtle Dove by 1952 was Amersfoort, on the south-east side of the Zuider Zee in Holland. In the last twenty years the species has become involved in a dynamic and unprecedented spread north-west across Europe from the Danube in the neighbourhood of Belgrade, which has brought advance elements over twelve hundred miles, to northern Denmark and southern Sweden, as well as Holland and France. Several writers have already predicted its arrival in Britain. In the course of this spread "hops" of over 150 miles from nearest-known to next-observed place have been recorded several times; e.g. from Zagreb, Yugo-Slavia to Caorle, Italy (150 miles), from Caorle to Saronno, Italy (190), from Belgrade, Yugo-Slavia to Monor, Hungary (180), from Tyrnau, Czechoslovakia to Öls, Silesia (195), from Öls to Haldensleben, Germany (260), from Haldensleben to Hofheim, Germany (175), from Celle, Germany, to Hiddensee, Germany (180) and from Celle to Skagen, Denmark (no less than 355). These are the great distances from some points at which Collared Turtle Doves have been newly seen, to the nearest point at which the species had been previously seen.

Manton is 270 miles from Amersfoort in Holland where a pair was seen in 1952 and where later no less than sixteen Collared Turtle Doves were observed. It is 275 miles from a neighbouring place in Holland, Harderwijk, where a pair probably wintered in 1948-49, probably bred in 1951 (three were seen) and certainly bred in 1952.

On this evidence, we suggest that the Lincolnshire bird of 1952 was a pioneer of the spread rather than an escape from captivity. Its habitat selection (marginal land and chicken-runs) moreover, resembled most closely that of the wild pioneers on the Continent, which are known, now, from between four and five hundred different places all colonised since 1930. Full details of this extraordinary spread, with maps and a full list of occupied places in Europe, and remarks on habitat and breeding, are given in a paper which J.F. has prepared for publication in a forthcoming number of *British Birds*.

ACKNOWLEDGMENTS.

We are very grateful to F. H. Davey of Greetwell Hall, Manton, for permission to study this interesting bird on his estate; to our friends mentioned earlier in this paper who so kindly gave us their field-notes, and particularly to Edward Keal for much help.

[The identification of this bird as a Collared Turtle Dove (*Streptopelia decaocto*) is fully substantiated, but the question whether it was a wild bird or one escaped from captivity remains a matter of opinion. As imported birds of this species were sold recently by a dealer within an hour's flight of Manton the possibility of an escape must be regarded as considerable, despite the failure of any purchaser who may have lost or released one of these birds to come forward with the information. In this connection the view may be taken that the dove's gradual desertion of the chicken-run at feeding-time is consistent with the behaviour of a bird that has been in captivity and is gradually turning to a fully wild existence. It seemed to become much less approachable by the end of August and this one may consider due to restlessness at the end of the breeding-season, or again to an increasing wildness.

On the other hand the scale and rapidity of the spread of the species north-westwards across the Continent have led to a widespread expectation that it might soon reach eastern England; this expectation appears reasonable unless the species has a serious inhibition against crossing wide stretches of water—a point on which we have no real evidence; or it is perhaps possible that the bird crossed to this country by the Straits of Dover).

Neither view is, therefore, improbable, and the recorded behaviour of this individual can be held to support either. If the writers are correct in their confidence that *S. decaocto* is beginning to colonise Britain, we may expect that further and less controversial occurrences will soon follow. Meanwhile we feel bound to conclude that no adequate evidence has so far been produced for adding *S. decaocto* to the British List.—EDS.].

SOME PHOTOGRAPHIC STUDIES OF THE PEREGRINE.

Photographed by H. AUGUR, ARTHUR BROOK, R. H. HALLAM,
HAROLD PLATT AND H. G. WAGSTAFF.

(Plates 5-12)

IN December, 1951, we published a selection of photographs of the Golden Eagle (*Aquila chrysaëtus*) intending them not as a part of the series of rarely photographed species, but as a tribute

to one of our less common and more spectacular breeding birds—and as a sequel to those we now include some similar studies of the Peregrine (*Falco peregrinus*). Plate 6 is a fine close-up; in both parts of plate 5, showing the bird flying from the eyrie, can be seen the barred pattern on the underside of the wing, while the long talons are just visible. There are not many good photographs of the Peregrine in flight—perhaps some of the best are those taken by E. Harper Hall of birds of the American race (*F. p. anatum*) which has, rather more frequently than the Peregrine in other parts of the world, adapted itself to breeding on high buildings in big cities including Philadelphia, Hartford, New York, and Montreal, where indeed Mr. Hall's photographs were taken; they show the falcon diving towards, and turning past, the camera—some have been published (*vide Countryman*, vol. xxxix, p. 239; *Auk*, vol. 69, facing page 250).

Several of our plates show the bird at the eyrie which is normally no more than a bare "scrape" in the soil or chalk, but not infrequently (*cf.* plates 5 and 11) the disused cliff-nests of, for example, the Raven (*Corvus corax*), Buzzard (*Buteo buteo*) and Herring Gull (*Larus argentatus*) are adapted after the removal of the original lining. This used to result, and to a certain extent still does, in a mistaken belief that the Peregrine, sometimes at least, builds a nest of sticks and wool.

An almost cosmopolitan species, represented by some seventeen races in various parts of the world, the Peregrine is nowhere really common. Its distribution in Britain has been discussed elsewhere in some detail by the writer (*vide Bird Notes*, vol. xxiv, pp. 200-205, 300-314). In a census carried out between 1947 and 1950, details were sent in of over 570 breeding-sites, of which nearly 500 were in use each year between 1947 and 1949. It was estimated that there were probably 100-200 further pairs, chiefly in certain of the wilder parts of Scotland and Ireland. There has been no opportunity since to make a complete check on the fluctuations in these figures, though reports received indicate that a few more of the disused sites are becoming re-occupied as the species recovers from the war-time slaughter, particularly in southern England. I.J.F.—L.

*We are planning to publish a summarized account of the status of our rarer birds of prey based on the results of information received since our appeal (*antea*, vol. xlv, p. 404) for records giving an indication of the post-war distribution of all species except Kestrel, Merlin and Sparrow Hawk. If those who can provide any further information that has not appeared in ornithological publications will do so, it will help to make the survey more complete. Details of actual breeding-sites will not go beyond our confidential files, and great care will be taken that actual localities cannot be traced.



PEREGRINE (*Falco peregrinus*).
IN FLIGHT FROM THE EYRIE. WALES.
(Photographed by ARTHUR BROOK).

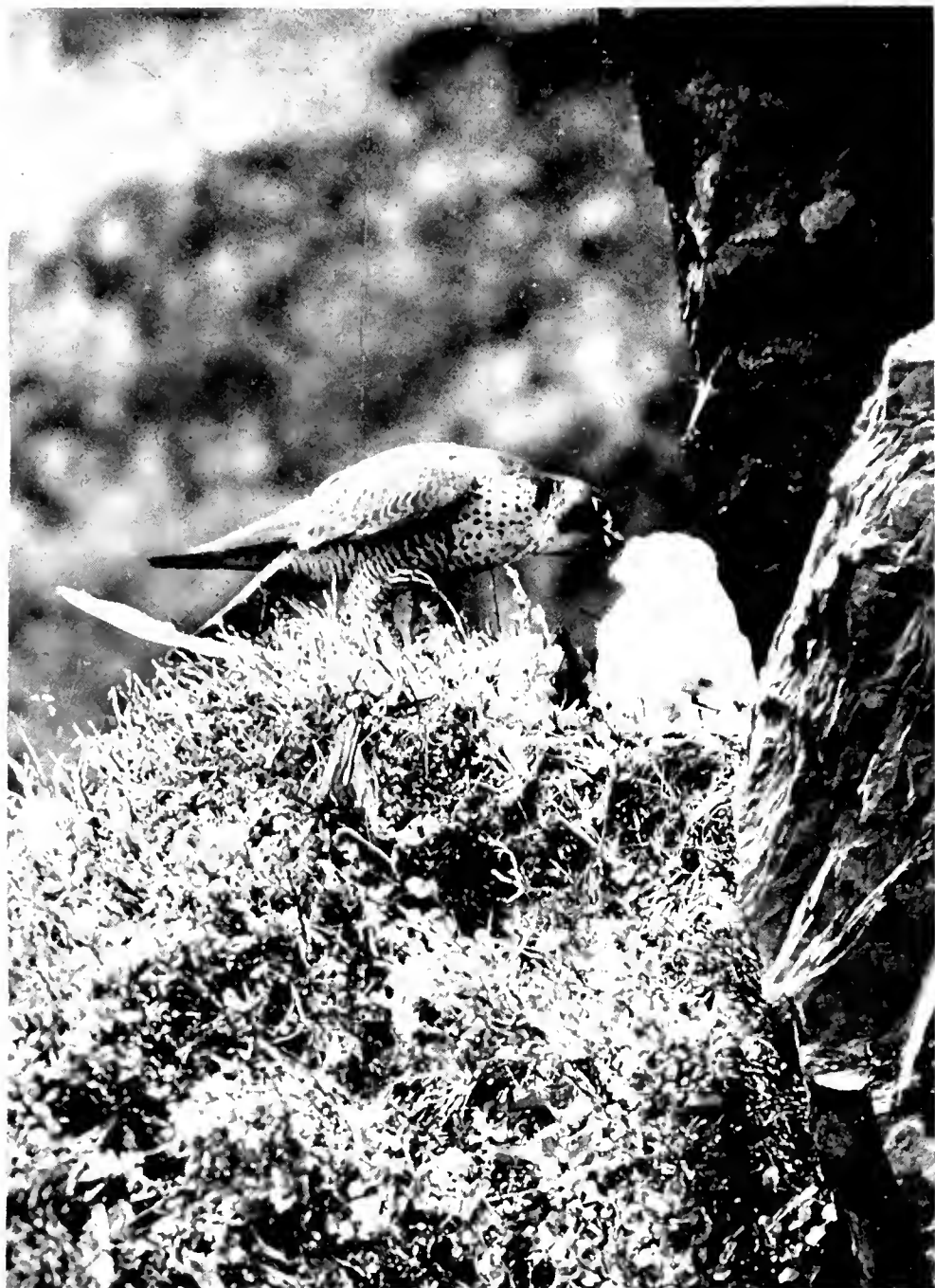


PEREGRINE (*Falco peregrinus*).
FALCON LEAVING THE EYRIE. WALES.
(Photographed by ARTHUR BROOK).

[The same eyrie appears in these two photographs and it is the disused nest of a pair of Ravens (*Corvus corax*)—a nesting-site not infrequently used by Peregrines (see text, page 50).]



PEREGRINE (*Falco peregrinus*).
STANDING NEAR THE EYRIE. WALES.
(Photographed by R. H. HALLAM).



PEREGRINE (*Falco peregrinus*).
FEEDING YOUNG AT EYRIE, WALES.
(Photographed by H. G. WAGSTAFF).



PEREGRINE (*Falco peregrinus*).
FEEDING CHICKS. WALES.
(Photographed by H. AUGUR).



PEREGRINE (*Falco peregrinus*).

ADULT AND CHICK. WALES.
(Photographed by H. V. V. V.)



PEREGRINE (*Falco peregrinus*).
PERCHED ON ROCKS. WALES.
(Photographed by HAROLD PLATT).



PEREGRINE (*Falco peregrinus*).
AT THE EYRIE, WALES.
(Photographed by ARTHUR BROOK).



PEREGRINE (*Falco peregrinus*).
AT EYRE WITH TWO YOUNG. WALES.
(Photographed by HAROLD PLATT).

**THE PARTRIDGE IN WALES :
A SURVEY OF GAMEBOOK RECORDS.**

BY

COLIN MATHESON, M.A., B.Sc., *Keeper of Zoology, National
Museum of Wales.*

THROUGH the courtesy of landowners in Anglesey, Brecknock, Denbigh, Flint, Glamorgan, Merioneth, Monmouth, Montgomery and Pembroke, the Department of Zoology of the National Museum of Wales has been able gradually to assemble a large collection of records of game shot on Welsh estates over long periods of years. The assembling of such data becomes yearly more difficult with the changes in social conditions and the breaking-up of old estates; at the same time, the permanent recording of former yields of game, from areas which in some cases are changing in character, is therefore in itself of value apart from any conclusions suggested by the figures. The complete records, of which space prevents publication here, are available for consultation in this Department. The present paper summarizes some features of interest in the records of Partridges (*Perdix perdix*).

In the second half of the 19th and the early years of the 20th century the status of the Partridge was greatly influenced by game preservation, but even before then it was common enough in places. Records for a Denbighshire estate covering the seasons 1827-49 (after which there is a long gap in the records) show an average annual bag of 240 Partridges; on the same estate the average from 1861 to 1871 was 590. A Flintshire gamebook, covering the year 1844 only, shows a bag of 175 Partridges. For a property on the borders of Shropshire and Montgomeryshire, records for 1822-27 show an average bag of 202 Partridges; the owner comments, "It was before the days of 'preserving' and it was all rough wild shooting".

The Partridge records are taken from thirteen estates in Wales and Monmouthshire. Some of them cover only short periods, but those for one estate run from 1854 to the present time, while others are unbroken for 50-70 years.

There are of course difficulties in the interpretation of figures of this kind. An estate may have been shot over only very lightly in a particular year in order to build up a good stock, or the number of days' shooting may have been less than usual for other reasons: with the result that the bag may not be indicative of the number of birds present. Artificial fostering of the stock (i.e., the introduction of birds and eggs from elsewhere) must sometimes also be taken into account, though this factor is less important than with Pheasants (*Phasianus colchicus*). Other difficulties range from changes in the habitat to changes in

firearms. On estates in Glamorgan and Monmouthshire breech-loading guns are mentioned in 1864 and 1865 respectively, but this may not have greatly affected the bags for some time because the early breech-loaders were, according to Pease (1932) and others, little superior to muzzle-loaders for game-shooting.

These difficulties however become less significant when one can compare records from a number of estates. It is proposed, firstly, to see how far our records are in general agreement with what are known to have been particularly good, or particularly bad, Partridge seasons on some English estates (though variations in game-preserving may partly obscure natural trends); secondly, to note the fluctuations which occur to some degree even in the population of a preserved species like the Partridge; and thirdly, to review briefly the status of the Partridge in Wales today.

HISTORICAL SURVEY.

The records before the 1870's are too few to allow any valid comparison to be made, but eight estates have figures commencing in or before that decade. The first season to show any common feature is 1879, a very poor Partridge year on all, but particularly on five of the eight. On estates in Glamorgan, Brecknock, Merioneth, and Denbigh, the bags were the lowest recorded until the second decade of the present century. The 1879 bag on an Anglesey estate is the worst since the records begin (in 1878) until 1907.

In parts of England as well, 1879 was an extremely bad Partridge year. In some long records quoted by Middleton (1934), 1879 is, with the exception of 1860, the worst year for a Norfolk estate during a period of 141 years (1793-1933), the worst for another Norfolk estate from 1862 to 1919, and the worst for a Yorkshire estate from 1843 to 1933. Parker (1927), says that 1898 on a Hampshire estate was "almost as bad as 1879 when under 1,000 Partridges were killed".

It may be noted that 1879 was a year of very bad weather both in rainfall (in the Partridge breeding-season) and in temperature. The total rainfall in the summer months far exceeded that of any other summer from 1863 to 1912; while in the Temperature Tables (1902) for 1871-1900, practically every recording station throughout the British Isles which had figures covering that period shows 1879 as the year with the lowest mean (maximum), the lowest mean (minimum), and/or the lowest mean temperature.

By contrast, 1887 was notable for high Partridge bags both in England and in Wales. Pease (*loc. cit.*) mentions "bags such as . . . 41 brace" at Cleveland, Yorkshire, "where we seldom got in average seasons more than 30 brace a day over dogs". Vesey-Fitzgerald (1946) states that at the Grange, Hampshire, four consecutive days' shooting yielded 4,109 Partridges. In

Middleton's records (*loc. cit.*) the 1887 bag on a Norfolk estate is the highest recorded with two exceptions during 141 years, on another Norfolk estate seventh highest in 71 years; two estates however in Hertfordshire and Yorkshire showed only average or poor bags.

In our Welsh records the outstanding nature of 1887 is most striking, for seven of the nine estates which have runs of figures including that year show the 1887 bag as one of the highest. On four estates (which may be designated as Glamorgan, Brecknock (1), Denbigh (3) and Merioneth*) it is the highest ever recorded; the second highest on two more, Denbigh (2) and Monmouth (1), and the fifth highest on Anglesey (1). Particularly remarkable are the bags for Denbigh (3) of 1,052 Partridges, where the biggest previous or subsequent bag was 710, and for Merioneth, with 1,019 Partridges compared with a maximum of 620 for any other season. We have no figures for Pembrokeshire, but Mathew (1894), wrote that "very good bags are made. In good seasons, such as the Jubilee year, for instance, it is also sometimes abundant in the wilder parts of the country, and we have had excellent sport".

The records of game of all kinds shot on these estates indicate that the outstanding bags of Partridges for 1887 were a phenomenon peculiar to that species, and also that they were not due to particularly intensive shooting but reflect a real peak in the Partridge population. Thus, the bags of grouse at Denbigh (2), Denbigh (3) and Merioneth were only average, although the Partridge bag at all three was quite exceptional. On the Merioneth estate, the number of gun-days in 1887 was 145, compared for example with 147 in 1884, and 158 in 1890; the total game shot apart from Partridges was 1,800 in 1884, 1,303 in 1887, and 1,595 in 1890. On the Glamorgan estate, the total bag in 1887 apart from Partridges was 609, compared with 701 in 1885, and 443 in 1890. At Denbigh (3), where 1,052 Partridges were shot in 1887, the other game totalled 1,114; in 1888, though the Partridge bag was only 131, other game totalled 1,058.

Here again it may be noted that 1887 was a year of exceptional weather. The mean percentage rainfall over Wales was only 72, the lowest recorded since the beginning of reliable records up to the present time. This low rainfall was marked during May, June, and July, the important months for the hatching and survival of Partridges. Since the rainfall figure for 1887 was not simply an average of divergent figures but represented the position *all over the Principality*, we may legitimately consider it in relation to the Partridge bags from all the estates; and without

*As some of the gamebooks were supplied on the understanding that the estate should not be mentioned by name in publication, it has been thought best to adopt this procedure throughout.

suggesting any correlation in most years between this and the Partridge figures, we note that the lowest mean percentage rainfall recorded for Wales coincides with the highest, or one of the highest, Partridge bags on seven out of nine Welsh estates.

A decade later, the records on several estates show very good bags for 1896 or 1897, or both. Parker (*loc. cit.*) gives 1896 as the "record year" for a Norfolk estate; while 1897 was the best year for estates in Hampshire, Essex and Suffolk, and one of the best on the Norfolk and Nottingham estates. At the Grange, in Hampshire, 3,533 Partridges were shot on three consecutive days in 1897. On one Norfolk estate quoted by Middleton, 1896 is the best year ever recorded, 1897 also being very good. On the other Norfolk estate, and on estates in Hertford and Suffolk, 1896 and 1897 are both outstanding years, and good though not exceptional on the Yorkshire estate.

These years were also characterized by notable bags in Wales. The 1896 bag is the highest recorded for Anglesey (1), and comes second and third in the records for Brecknock (1), and Merioneth respectively. On Brecknock (2) estate the 1897 bag is the highest recorded, the second highest on Anglesey (1), and the third highest on Denbigh (3) and Monmouth (2).

No other feature common to most of our records presents itself until 1907, which was characterized by very poor bags at all the Welsh estates which have records for that year, particularly at the Glamorgan, Brecknock (1), Brecknock (2), Monmouth (2), Denbigh (2) estates and above all at Anglesey (1), where the annual bag for the previous quarter of a century was often above 2,000 and rarely below 1,000, but dropped in 1907 to five birds; only once again has the bag for this estate reached 1,000. Tyler (1923) notes that on 9th September he shot twelve Partridges—a record for Monmouthshire for that very poor year; other gamebooks, he states, showed a similar report.

In England, Parker quotes 1907 as the worst year on a Nottinghamshire estate between 1896 and 1926, and on a Hampshire estate between 1897 and 1924. In Middleton's records the 1907 bag is with three exceptions (1817, 1830, and 1879) the lowest for one Norfolk estate since the records began; while for the Suffolk estate it is the worst since the beginning of the records in 1889 up to that time, and a poor year also for an estate in Bute. On three other estates however, in Hertford, York and Norfolk, the bags were quite normal.

The abnormally bad and abnormally good bags of 1879 and 1887 respectively, even if not due to abnormal weather conditions, at least coincided with them. In 1896-7 and 1907 however, the published records of rainfall, temperature, etc., either over the whole country or for particular areas, reveal no feature in which conditions differed markedly from the average.

PERIODIC FLUCTUATIONS IN PARTRIDGE POPULATIONS.

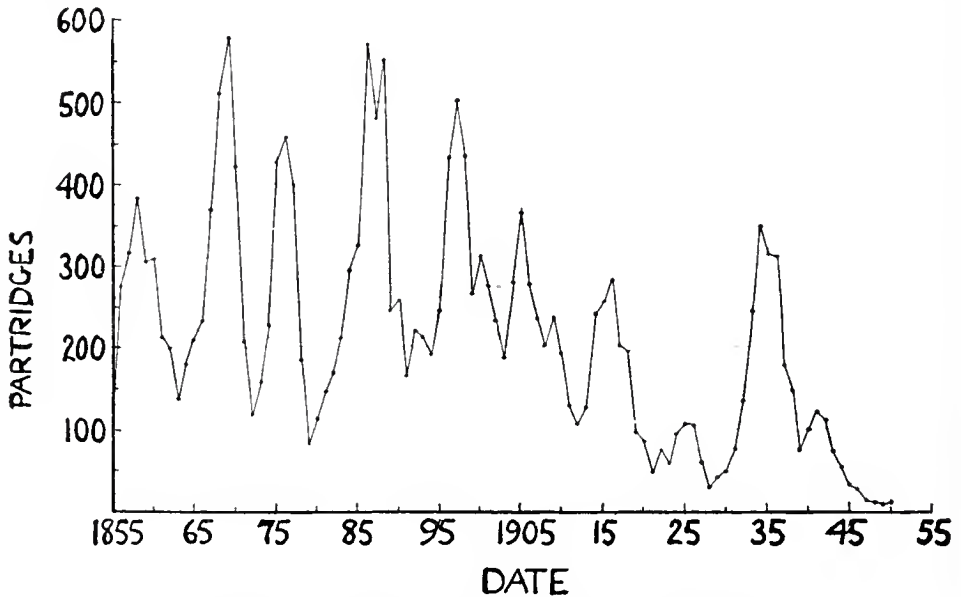
Elton (1942) and others have shown the existence, among various wild animals in Canada and elsewhere, of a definite periodicity in numbers, the population of each species rising to a peak, and dropping again, at approximately equal intervals of years. Despite the fact that the whole object of Partridge management is to maintain from year to year the optimum population that the area will carry, yet Middleton has published graphs for five estates in England which suggest a periodicity of this kind. The average period between the population-peaks he estimated as 8.2 years. The reasons for this and similar phenomena are still unknown.

The Welsh figures have been analysed in the same way, the annual bags being calculated as moving averages of three, in accordance with the common statistical technique for smoothing random variations, and the results plotted as histograms. The curves for all the estates show, more or less definitely, alternating periods of gradual rise and fall, and there are certain similarities between them; though only one, that for Denbigh (3), presents a clear periodic pattern over a long period (see Graph and Table).

TABLE: RECORDS OF PARTRIDGE BAGS FROM DENBIGH (3) ESTATE.
1854-1951.

Season	Partridges	Season	Partridges	Season	Partridges	Season	Partridges	Season	Partridges	Season	Partridges	Season	Partridges
1854	91	1868	651	1882	151	1896	468	1910	182	1924	43	1938	54
5	149	9	710	3	164	7	705	1	168	5	143	9	49
6	212	1870	372	4	320	8	333	2	39	6	135	1940	114
7	466	1	182	5	400	9	264	3	112	7	40	1	147
8	276	2	69	6	257	1900	200	4	233	8	4	2	103
9	407	3	103	7	1052	1	474	5	375	9	44	3	83
1860	233	4	303	8	131	2	152	6	154	1930	76	4	32
1	287	5	279	9	470	3	70	7	319	1	24	5	46
2	120	6	699	1890	134	4	340	8	134	2	135	6	20
3	189	7	398	1	164	5	430	9	142	3	244	7	13
4	105	8	94	2	196	6	325	1920	15	4	349	8	8
5	245	9	58	3	301	7	81	1	99	5	453	9	14
6	278	1880	91	4	144	8	298	2	25	6	140	1950	8
7	180	1	193	5	124	9	227	3	101	7	337	1	15

Here, at any rate up to the late war, a marked periodicity with peaks in 1858, 1869, 1876, 1886, 1897, 1905, 1916, 1925, and 1934, gives an average interval of 9.5 years—somewhat longer than that calculated by Middleton, though one of his estates gives an interval of 9.2 years. If we include the war years 1939–45 and those following, we have another peak in 1941, but various factors, operating with an intensity not experienced before, have led to a grave decline in the Partridge population here as elsewhere—the birds have of recent years dwindled almost to vanishing point.



GRAPH: PERIODIC FLUCTUATIONS IN PARTRIDGE BAGS ON DENBIGH (3) ESTATE, 1854–1951. (Figures smoothed as moving averages of three.)

THE PRESENT POSITION.

The great Partridge counties of England are Hampshire Norfolk and Suffolk,* and the Partridge stock in many parts of these counties remained at a high level until the period between the two wars.

Of the six Welsh estates for which our records continue into the 1930's, four were still yielding fair bags up to that time, but only one (in Anglesey, always considered one of the best Welsh counties for Partridges) is now maintaining anything like the figures of former years. Even in Anglesey, in the late 'twenties, bags on one estate were reported as "considerably less than 25–30 years ago"; on another estate, where "formerly . . . we should get some 45 brace, now one would do very well to get

*On one estate in Norfolk, the average annual bag during the fifty years, 1881–1930, was approximately 3,700. On the best of the Welsh lists in our records, that for Anglesey (1), the average bag was only about 850 during the same period.

half that number". The sender of a Flintshire gamebook remarks that among the most interesting points in it are "the records of Partridges . . . now as the Dodo around here". As far back as 1928, the Partridge was described as "now almost extinct" around Dolgellay, Merionethshire. In 1925, Partridges in Glamorgan were stated to be "still fairly numerous in most suitable localities, though the numbers are to a certain extent kept up by introduced birds"; in Monmouthshire, they were "decreasing in some districts" even in 1937 (Ingram and Salmon, 1927, 1939).

Of the many reasons adduced for this we can mention only those that seem the most important. For example, one estate (Glamorgan) no longer exists either as such or as open country, having become entirely urbanized with the expansion of an adjacent town, and this is only an extreme instance of the suburbanization of much of the countryside. In other cases, changed methods of farming and land utilization are suggested. The decrease of arable land in modern times is often mentioned, though one landowner observes, "There is of course less arable land than 50 years ago, but when we had them a large proportion of our Partridges did not live on the arable fields but on rough ground—the bracken, heather and gorse on the hillsides. The last survivors were in such country".

Another factor is the decrease in keeping—a friend instances a small stretch of country around Cardiff, where before the First World War there were fourteen gamekeepers, but by the beginning of the Second only two.

From several landowners come observations on the effect of sheepdogs, and also of foxes and other "vermin" which have multiplied with the decrease of keepers and game-preserving. It may be mentioned that according to information supplied by the Infestation Control Division of the Ministry of Agriculture and Fisheries, 15,209 foxes are *known* to have been killed in Wales and Monmouthshire from January, 1949, to October, 1950, inclusive.†

It is not known how far diseases like strongylosis and coccidiosis (which were first noticed as widespread among Partridges just before the First World War, and which Collinge (1938) suggests may have become more so owing to changes in feeding habits) may be implicated in the decline of the Partridge in many parts of Wales.

In conclusion, I wish to thank the Meteorological Office, Air Ministry, for the mean percentage rainfall figures for Wales from 1860 to 1951, and my former colleague John Steegman for help in obtaining some of the game records.

†Of these only one was from Anglesey, where the fox is practically unknown.

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NOTES.

Balearic Shearwaters off Sussex.—On November 24th, 1951, during a westerly gale, I saw a Balearic Shearwater (*Puffinus p. mauretanicus*) off Langney Point, Sussex. It was flying westwards and was about 400-500 yards out. Its size appeared to be about that of a Manx Shearwater (*P. p. puffinus*) and the upper-parts were dark brown, the under-parts greyish with some brownish.

Again, on September 3rd, 1952, I watched another of this race at the same place. This bird was also flying westwards some 400-500 yards out. It was making rather slow progress against a gale with the result that I was able to see it well through binoculars and telescope. The upper-parts were dark brown; the edgings of the under-wing were dark while the rest of the under-wing was greyish; the remainder of the under-parts were also greyish except for the flanks which seemed darker.

D. D. HARBER.

Balearic Shearwaters off Devon.—After investigating the record by Messrs. O. D. and D. B. Hunt of two *P. p. mauretanicus* between Lundy and Bideford on September 6th, 1950, (*Report of the Devon Bird-watching and Preservation Society, 1950*) we are satisfied of its correctness. We have also received from Mr. M. C. Powys Mauriee full and satisfactory evidence that he saw two or three birds of this race *mauretanicus* among at least a hundred of the typical form about 2 miles off Berry Head, S. Devon, after a storm on July 22nd, 1951. The birds permitted

approach within about 10 yards, and those in question had dark brown upper-parts and light brown under-parts "except for a white patch, rather ill-defined, on the belly". The under-parts of the wings were slightly lighter, but not as white as in the Manx Shearwater.

Great Skua in Norfolk in May.—Mr. Maurice Larkin reports that, on May 28th, 1952, the Rev. T. P. Backhouse and he saw a Great Skua (*Stercorarius skua*) alight on Salthouse beach, Norfolk, and that later in the day, accompanied by Messrs. J. A. Bailey and I. C. T. Nisbet, he obtained excellent views of the bird at ranges down to c. 50 yards. It showed no signs of being oiled, but its laboured flight and its apparent difficulty in standing and walking suggested injury or illness, which may explain its presence on shore.

There are very few spring records for the Great Skua from anywhere in British waters other than on the breeding grounds, and the one seen in North Kent on May 13th, 1945, (*antea*, vol. xxxviii, p. 319) appears to be the only other May record of this species in England.

Lesser Black-backed Gull breeding in Kent: correction.—With reference to the note on this subject (*antea*, vol. xlv, p. 372), it is pointed out that the words "has often attempted to nest at Dungeness" are incorrect in that they imply lack of success. Mr. G. E. Took records that at Dungeness there were 2-3 pairs in 1930-1934, and N.F.T. adds that the species nested there "regularly, successfully and in increasing numbers from 2 pairs in 1931 to 26 pairs in 1938 and 21 in 1939". Since the war, however, although the species has had some measure of success, there have not been more than a very few pairs and frequently the eggs have been taken.

In the last line of the same note, owing to an unfortunate error in the final printing, the word "country" was inserted; this should of course, have been "county".

Unusual display of the House Martin.—On June 28th, 1952, at North Dalton, East Yorks, I observed the following behaviour by a House Martin (*Delichon urbica*). The bird was sitting in the normal upright posture on an electric supply cable, when suddenly it leaned forward into a horizontal position with its head stretched forward in line with its body and started to sing. This song can best be described as a beseeching and excited trill. At the same time the bird held its wings away from its body with the primary feathers closed so that it took on the appearance of an arrow head. The wing tips were depressed below the line of the body and touched the wire on which the bird was sitting. The closed wings were quivered excitedly, so that the movement was communicated to the whole body. The bird looked as if it were trying frantically to escape from the wire, but was being held

there by the legs. Three or four times during the five minutes which the display lasted the bird swung round rapidly as if on a pivot. The behaviour ended as rapidly as it began: the bird preened for a few seconds before flying off with another bird which flew towards the cable. A third bird which was perched only two feet away remained impassive throughout.

I have seen parts of this behaviour before, but this is the most lengthy performance I have recorded. ALEC BUTTERFIELD.

[Various displays of the House Martin have been described since the publication of *The Handbook* (*vide, antea*, vol. xl, p. 54; vol. xli, pp. 310-311; vol. xliii, pp. 256-257) and also of Swallow (*Hirundo rustica*) (*antea*, vol. xxxiv, pp. 257-258) and Sand Martin (*Riparia riparia*) (*antea*, vol. xxix, p. 282; vol. xl, pp. 20, 295; vol. xlii, p. 217; vol. xliv, p. 280), but the above is rather different from any of them. Perhaps it most resembles the account by P. H. T. Hartley of a male Swallow displaying to a female, and John Tooby's description of this by a male Sand Martin; part of it also recalls Hartley's description of a female Swallow inviting copulation. The pivoting which does not seem to have been recorded in the House Martin is of quite common occurrence.—EDS.]

Early nesting of Song Thrush.—Mr. R. F. Wormald writes to record that on January 26th, 1952, in the garden of Colnei Diggle near Old Malton, Yorkshire, three just-fledged Song Thrushes (*Turdus ericetorum*) flew from a nest in a shed that was being pulled down. One was picked up by a dog but was unhurt and was released. On the next three nights there were 12, 18 and 14 degrees of frost respectively and yet on January 29th and 30th all three were seen alive and well and being fed by the adults.

Black-eared Wheatear in London.—On April 23rd, 1951, at about 13.00 hours, when H. C. H. was standing by a group of still leafless trees in Regent's Park on the Zoo side of the Institute of Archæology, a bird showing a great deal of white alighted on a low branch not more than 20 yards away. It had the shape and posture characteristic of wheatears and it frequently made short sallies to catch flies. H. C. H. was able to observe it in bright sunshine with the light generally behind him for 5—10 minutes. When it flew off he did not follow it as he was anxious to obtain the opinions of other observers. For the same reason he did not have time to write down the following description until afterwards: the size was about that of a Wheatear (*Enanthe ænanthe*); the bill was black; the forehead just above the beak, the lores, ear-coverts and sides of the throat were all black, with some light scalloping—the whole making a faintly mottled black patch in the form of a truncated triangle through the eye, back towards the nape and down to the profile line of the throat. The

whole side of the head above the black was white or whitish, leaving only a narrow strip on the crown that seemed darker; the nape pale brown shading to tawny, strongly streaked, on the mantle, becoming darker over the wing and wing-coverts; primary-coverts and primaries black with some pale markings on the latter. No good view of the open tail, but the band of black at the end seemed fairly broad. The centre of the chin and throat H. C. H. *thought* were white (but he did not see the bird head on), and below this a conspicuous orange-pink suffusing the whole breast, a brilliant colour noticeable even in flight; belly whitish.

In an attempt to see this bird E. S. visited the Park at 16.00 hours, but not until 17.10 did he discover it in an open stony field near the Institute of Archæology, and even then he saw it for only ten seconds; however, at 19.25 E. R. Parrinder and E. S. together saw the bird there for 7 or 8 minutes. The description obtained by E. S. is as follows: bill black, top of head light brownish with slight flecks of a lighter colour, greyish-white eye-stripe, area of black passing to the ear-coverts and approximately rectangular in shape. The mantle rufous-brown with some striations, the primaries black, the rest of the wing blackish-brown with lightish tips; the tail white with a black band across the end and black central feathers; under-parts were salmon pink, whitish on the belly. The bird was rather shy and its protective colouration excellent. On the one occasion that it faced E. S. there was no sign of the white chin suggested by H. C. H.

On these descriptions the bird appears undoubtedly to have been a Black-eared Wheatear (*Æ. hispanica*); this conclusion we both reached independently. We examined among others, the skins of both races of this species (*Æ. h. hispanica* and *melanoleuca*) in the Natural History Museum and consulted Mr. Derek Goodwin whose knowledge of the living bird was most useful. It seems more likely that it was of the Western race (*Æ. h. hispanica*); H. C. H. may have been mistaken in thinking he saw white on the chin (black certainly covered all of the chin and throat that was visible in profile) and if so, it seems certain from the large area of black that this was of the dark-throated phase. Incidentally, of the two skins that H. C. H. selected as being most like this bird (BM. 1941:5:30-5482 and BM. 1934:1:1-4235), both dark-throated males of *Æ. h. hispanica*, the former has some white sprinkled on the black of the chin.

H. C. HOLME AND ERIC SIMMS.

[There are certain marked discrepancies in the two accounts, presumably of the same individual. However, the most important of these, the different versions of the colour of chin and throat, are compatible when it is remembered that Mr. Holme only *thought* these parts were white when he wrote down his descrip-

tion *afterwards* (the importance of a description taken down at the time, each item being verified with the bird at hand, cannot be overemphasized); it is also a fact that Mr. Holme, unlike Mr. Simms, did not see the bird head on. The two descriptions also diverge in the colour of the head above the black, but again they can be reconciled in our opinion if one remembers the different conditions in which the two observers saw the bird, Mr. Holme in the bright sunlight of mid-day, Mr. Simms in the evening. We have received sketches indicating the distribution of the colours on the bird and there is no reason for not accepting the identification of the *species* here, but as the Black-eared Wheatear is subject to considerable variation not only in its two races, but also on account of the dimorphism found in each race, no more than a probable determination of the subspecies can be made.—Eds.].

Probable polygamy among Robins and a nest used for two successive broods.—On May 17th, 1952, I visited a garden in Worthing, Sussex, where—so I had been informed—Robins (*Erithacus rubecula*) had built two nests near each other and these I was shown by Mr. O. E. Woodley. The nests were about 15 inches apart—one directly above the other—in an ivy-covered wall facing west, and the lower was about 5 feet from the ground. The nests were both quite open and it was possible for me to see into them by pulling away the ivy. An adult was brooding on each of them at the time and I could plainly see the tail, back and red forehead of the lower bird, and the tail and back of the upper.

Both birds sat very tight, and the upper one looked up for some moments—with the result that I was able to see its red forehead—before it flew off as I put my finger to the nest, from which I then took out one egg which was normal, but fairly heavily marked. Mr. Woodley had not examined the eggs to see if there were any difference between the two clutches and I did not risk disturbing the lower bird in order to do so. There were, according to Mr. Woodley, 6 eggs in the top nest and 5 in the bottom one. The lower bird sat tight for the several minutes we were at the nests, but I did not see anything more of the other, nor did I recognize a bird which could have been the male, but Mr. Woodley seemed to think that there was only one male in the vicinity, an opinion based on the belief that he had heard only one bird singing.

I again called at the house on June 11th, 1952, when both nests contained young, but it was not possible for me to count them; I saw at least one adult arrive with food. I was not able to visit the nests again until after the breeding-season, but Mr. Woodley tells me that both broods fledged successfully. Subsequently the

upper nest was again found to contain eggs, and a second brood was successfully hatched and reared in it (*cf.*, *antea*, xlv, pp. 175-176 and vol. xiv., p. 291).

J. SHEPPERD.

[Since there is no evidence that the male Robin ever incubates (*vide*, Lack in *The Life of the Robin*, p. 87) and as it is obvious that two pairs would not tolerate such close proximity, it seems almost certain that this is a genuine case of polygamy (one male and two females). We showed these details to Dr. David Lack and he formed the same conclusion, adding that at least two similar cases have been recorded. Details of what may have been a comparable case have been received from Mr. D. L. Dunkin, who discovered near Horsham, Sussex, on April 20th, 1952, two nests of this species that were measured to be 5 feet apart. One contained 5 eggs and the other 3, both clutches being found to be warm. The nests were on the ground in undergrowth in a small thick spinney. Only one Robin was flushed at the time of finding, and when the nest was revisited the clutch of 5 eggs had disappeared. It is very unfortunate that in neither of these cases were sufficient steps taken to make certain of the circumstances involved.—EDS.]

Unusual nesting-site of Willow Warbler.—Miss M. G. Newman has sent us details of a nest built in May, 1952, by a pair of Willow Warblers (*Phylloscopus trochilus*) 6 feet 3 inches above the ground in the top of a privet hedge at High Hurstwood, near Uckfield, Sussex. About fifteen records of Willow Warblers' nests some distance above the ground have been quoted or described in *British Birds* (*antea*, vol. xi, pp. 21, 90, 118; vol. xvii, p. 75; vol. xxv, p. 164; vol. xxxvii, p. 55; vol. xlv, p. 279) at heights varying from 1½ feet to 30 feet, in situations that included the tangled twigs near the bases of low bushes (a not uncommon site), the branches of firs and pines, in crevices or supported by climbing plants against walls, trellis-work or trees, and the disused nests of other species, including once a squirrel's deserted drey. The most interesting feature of the present record is that it was an independent structure, neither against a wall or tree, nor on the foundations of some other nest. [On May 29th, 1948, I found the nest of a pair of Willow Warblers 7 feet up in ivy on an outhouse roof at Rostherne, Cheshire. The nest was sited so that it resembled a shoe with the entrance-hole to the sky and the eggs under cover in the "toe". I have also one other relevant record from my own home near Northwich, Cheshire, of a nest 3 feet up in ivy on a wall.—A.W.B.]

Pied Wagtail feeding on fish-fry.—On June 2nd, 1952, on the River Beult, at Hawkenbury in Kent, accompanied by A. Barnicott, I watched a Pied Wagtail (*Motacilla alba yarrellii*) taking small Perch-fry (*Perca fluviatilis*), approximately 3.5 cms. long, of which there were myriads sheltering behind large stones just below a weir.

The bird flew down onto the submerged stones and caught a fish by the middle, then returned to a particular stone on which it struck this repeatedly and, after some manipulation, swallowed it head first. After devouring four in this manner the Pied Wagtail flew off with a fifth, I suggest to its nest. Ten minutes later it came back and searched the bank, presumably for insects, but soon departed in the same north-westerly direction. Shortly afterwards it returned for the third time, when, after eating two fish, it caught another, stunned it and pushed it to the back of its bill. It then caught two more and held them in its beak, as the Kingfisher (*Alcedo atthis*) does, with their heads and tails facing in alternate directions, and flew away again. On the following day I again saw this bird fishing.

It is mentioned in *The Handbook* that stranded trout-fry (*Salmo sp.*) are occasionally taken, but these were by no means stranded, and the bird under discussion seemed to have brought the technique to a fine art.

D. D. B. SUMMERS.

[Some authors—for example, Kirkman and Jourdain in *British Birds* (Book) p. 27—have mentioned that fish-fry are on occasion caught and eaten by Pied Wagtails, and a comparable observation by the late George Bolam with regard to the Grey Wagtail (*M. cinerea*) and “Minnows” is quoted in *The Handbook*, vol. I. p. 224. There seems however, to be no published account like that by Mr. Summers of the details of the behaviour involved, but in all probability the occurrence is more common than this would suggest. I have one similar record in my own notes—May 26th, 1945, near Bedford Sewage Farm—but at no time while I was watching was more than one fish held in the beak.—I. J. F. ·L.]

REVIEWS.

The Fulmar. By James Fisher. (Collins, New Naturalist special volume, London, 1952). 42s.

This book differs from its predecessors in the *New Naturalist* monographs, in that it is a population study rather than a life-history. James Fisher's interest in the Fulmar began as the study of the spread of this species in Great Britain and later this expanded into an examination of its world range and even the history of each individual colony. The history and causes of this spread, which is the main theme of his book, involved an immense labour in searching the literature and communicating with hundreds of observers in many parts of the world. It has resulted in a mine of information absolutely unique in the history of species studies.

The first two chapters introduce the arctic Fulmar and the closely related antarctic species. Then follow eight chapters on the growth of the Fulmar colonies in the Northern Hemisphere, the origin of the Fulmar spread in Britain and the history of the colonies. The detailed information in these chapters may make heavy reading for the non-specialist, but their value lies in the many precise examples of population change in different parts of the Fulmar's range.

In Chapter 11 the population growth and spread in Britain is strikingly demonstrated in tabular form. Fisher traces the growth of the British breeding population by calculating the average number of occupied sites per colony for different "orders" of size. He then derives a figure for the total number of occupied sites in Britain per 5-year period from 1877 to 1949 and we find that in the course of 72 years, there has been an increase from c.12 to c.68,575. However, we may be hesitant to share his opinion, on the basis of statistics alone, that in the next 20 years the number of breeding colonies and the breeding population are likely to double.

On pages 150 and 151 reasons are discussed for believing that the Fulmar came to Britain from Iceland via the Faeroes rather than from St. Kilda whose population was static. History would appear to support this view but in Chapter 12 (colour-phases), page 267, the bulk of Iceland's Fulmars are grouped in one colour category (L) and the British Fulmars in another (LL). If the theory is correct one would expect a closer identity of plumage colour. Recent work by Professor Wynne-Edwards emphasises the homogeneity of the Iceland-Faeroe-British Fulmar population.

Fisher's work has brought to light the rather extraordinary colour-phase distribution in the Davis Strait where the west Greenland birds are light and the eastern Canadian birds dark. In the eastern Atlantic, Fisher describes the change from light to dark as "a polymorph-ratio-cline (as Huxley calls it)" but fig. 38 on page 282 suggests two rather distinct populations: light birds in Iceland, Jan Mayen, Norway, Faeroe and Britain and predominantly dark birds to the north. His Bear Island figure of c.60% dark is too low.

After a chapter on the distribution at sea, the remaining seven chapters deal with different aspects of behaviour and breeding biology. The latter cover 141 pages compared with 289 in the previous sections. In Chapter 19 the main theme reaches its conclusion in a discussion on the possible factors responsible for the spread of the Fulmar. Fisher discards the "St. Kilda Theory", any effect due to major climatic trends and possible limitations in nest-site selection and gives a great deal of evidence to support his belief that the whaling industry and later trawling, provided the Fulmar with an abundant food supply which has resulted in increased survival of young birds and adults. Fulmars feed in such large numbers on whaler and trawler waste that it is difficult to believe that it has not, in some way, had its effect on the species. Against this we must set a number of puzzling questions; there is no evidence that true arctic Fulmars, i.e. those outside the Iceland-Jan Mayen-Faeroe-British population, have increased in numbers or extended their range, although they must have had just as much opportunity to exploit the food supply provided by man; it is not clear why there has not been more colonisation of the Norwegian coast and particularly the Canadian Atlantic coasts; we do not yet know the operational range of a breeding Fulmar and practically nothing of the food fed to young birds.

In the last chapter, Fisher's previous contention that the Fulmar is an annual rather than an intermittent breeder, is shown to be supported by recent data but it is difficult to see on what evidence he postulates a 4-year period of immaturity at sea followed by a 4-year period of annual visits to the cliffs before breeding.

The book is well illustrated with excellent photographs and sketches, many of great interest such as those of St. Kilda natives and Cherry Kearton's photograph of a Fulmar taken in 1896. The bibliography (over 2,400 titles) is to be published separately.

Although perhaps not ideal material for semi-popular treatment, his very agreeable style makes light work of the more solid sections. In any work of this scope and length, there is bound to be argument on a score of points, but we must be grateful to James Fisher's "mania" for amassing and presenting, so ably, the data on which both sides must depend for a long time to come.

ERIC DUFFEY.

Birds and Men. By E. M. Nicholson. (Collins, New Naturalist Series, 1951). 21s.

THE aim of Mr. Nicholson's book is to give "a picture of the impact of civilisation on our bird-life" and a treatise on this subject will certainly be welcome to most ornithologists and protectionists. As the author explains in the introductory chapters, the most important influence of man on bird-life is an indirect one, which acts through his effect on the environment, for in a country like Great Britain it is man who decides which habitats will develop or persist and which will disappear. Two factors determine whether a certain species of bird will occur in such semi-natural or even fully artificial surroundings—firstly, the habitats which man tolerates must agree with the specific standards of habitat preference, and secondly, the environment must allow the maintenance of the population. As a result, therefore, of man's influence, many species have disappeared or decreased while others have gained in numbers or even colonised the country. The fate of a certain species will often depend on rather subtle details of its biology, and this is the main reason why a profound discussion of the subject is difficult. At present our ecological knowledge is much too scanty for a full synthesis. Mr. Nicholson is fully aware of this difficulty and he stresses that one of his main purposes is to point out problems for further research. It is regrettable, however, that he did not include a general introduction to the ecology of birds on the results of recent work. In the reviewer's opinion such an introduction could have clarified many problems common to all species involved.

Life-histories of important species, grouped according to the main categories of man-made habitat, cover the greater part of the book. They represent a kind of natural history of the birds of cultivated country, which the author gives in addition to the discussion of his main theme. This part includes a somewhat descriptive picture of specific habitats. Apparently the author did not venture a more analytical treatment of this topic.

Birds and Men is illustrated throughout by photographs which are for the most part well chosen and very characteristic; most species that are mentioned in the text have a picture. L. TINBERGEN.

The Birds of the Channel Islands. By Roderick Dobson. (Staples, 1952.) 30s.

The author has performed a valuable service in assembling in this book the scattered records of a century, together with his own notes and those of other present-day observers in the Channel Islands. The result is the first comprehensive account of Channel Island birds, which are arranged species by species in *The Handbook* order. The book will be essential to all concerned with the birds of this region. The main section under each species is "Distribution" (with separate headings each for Jersey, Guernsey, Alderney, Sark). Under most species there is also a section on "Remarks", while for birds which are known or thought to have nested, three additional sections are given, "Breeding", "Nest", "Eggs". Thus much more space is allotted to description of nest, nest-site and eggs, than to the bird itself. Treatment is by subspecies, with separate accounts, for example, of Eastern and Western Little Bustards. Trinomial scientific names even include *Sylvia borin borin* and *Phylloscopus sibilatrix sibilatrix*! The Balearic race (*Puffinus p. mauretanicus*) is separated from the Manx Shearwater (*P. p. puffinus*), but is then "lumped" with North Atlantic Shearwater and Great Shearwater. On the other hand no suggestion is made that the breeding forms (of Song Thrush, Chaffinch, Robin, etc.) may be joined by other races on passage or in winter. In an area like the Channel Islands, where some races are intermediate or uncertain, treatment by species instead of subspecies would have had advantages.

Moreover, we entirely disagree with the use of the name "Armorican Warbler" for the local race of Dartford Warbler. Even in forms which are separable in the field (which the races of Dartford Warbler are not) confusion

can only be caused by concocting English subspecific names which give no clue of relationship to birds of the same species that have established names. Confusion will also be caused to British readers by use of the name Treecreeper for the species *Certhia brachydactyla* (the Short-toed Treecreeper) which breeds in the Channel Islands, but which, as the author says, is not found in Britain. Conversely the species which we know as Treecreeper (*Certhia familiaris*) does not occur in the Channel Islands. Yet the author compares the size of the eggs of his "Treecreeper" with "British eggs, of the subspecies *Certhia familiaris britannica*"!

The material is presented in a readable, interesting manner and supported by an excellent selection of photographs illustrating habitats, birds and nest-sites in the Islands. There is a useful map. The book contains a good deal of information on changes in status, including the beneficial effect (for birds) of the German wartime occupation; also items of interest in comparison with British distribution, for example that the Slavonian is the commonest grebe in winter.

P. A. D. H.

LETTERS.

A SURVEY OF RATHLIN ISLAND.

To the Editors of BRITISH BIRDS.

SIRS,—I am working on a study of the vertebrate fauna of Rathlin Island and would be grateful if those who have made any investigation of the fauna would send details of their work to me. All papers, note-books, etc., would, of course, be returned.

C. DOUGLAS DEANE.

Keeper, Natural History Division, Museum and Art Gallery, Belfast.

"BALEARIC SHEARWATER OFF NORFOLK".

To the Editors of BRITISH BIRDS.

SIRS,—In the February, 1952, number of *British Birds* (*antea*, vol. xlv, p. 79) an ornithologist was criticised on the paucity of his field notes when observing a Sooty Shearwater (*Puffinus griseus*). I am, therefore, surprised to read that he, and another, when identifying a Balearic Shearwater (*P. b. mauretanicus*) off Blakeney Point, Norfolk, describe this bird, at about 1,000 yards range, as somewhat larger than a Manx Shearwater (*P. b. puffinus*) though no bird of the latter species appears to have been present. Reference to the measurements given by *The Handbook* shows that there is an appreciable overlap in the wing lengths of these two birds.

It seems that Mr. Harber and his friend, Mr. Mead-Briggs, have peculiarly acute vision to note such small differences at this distance.

W. H. DADY.

[We have received a similar criticism of this record from Professor M. F. M. Meiklejohn. However, while the great majority of Balearic Shearwaters cannot be distinguished from Manx in size there is much individual variation in size as well as in colour, and Mr. R. M. Lockley's experience (*antea*, vol. xlv, p. 45) shows that where the two races are seen together the larger size is noticeable in some Balearic Shearwaters although from the wing-measurements alone this might not be expected. In any case this was not a point which we relied upon in accepting the identification, and we consider that, as already stated (*ibid.*, p. 80), the utmost care is necessary in making identifications at sea.—EDS.]

UNDER-WATER MOVEMENTS OF THE DIPPER.

To the Editors of BRITISH BIRDS.

SIRS,—The interesting observations described in Jones and King (1952) make it evident that the suggestions I made in Brownlow (1949) about the methods the Dipper (*Cinclus cinclus*) uses to keep down in the water were not entirely correct. Dr. Jones has kindly told me that the gravel in his tank consists

of stones quite large enough to hold a Dipper down, had his bird tried to use footholds, and that the depth of water in his tank was 8-12 inches. The observations on which I based my article were made on birds feeding in shallower water. In those quoted the birds were just submerged; in many others, birds were only partially submerged and obviously walked. It would now appear that the Dipper has two normal methods of keeping under water; swimming by means of wing movements when the water is deep enough, and walking on the bottom when it is not.

I suggest that, in shallow water, the birds may also use their wings to achieve a faster speed than walking, or, momentarily, to regain a lost foothold. It is, of course, possible that birds normally feeding in shallow water acquire a preference for walking, and those normally feeding in deeper water for swimming.

I hope that these new observations of a Dipper actually walking and swimming under water will finally dispose of any idea that the Dipper keeps down by using the force of the current on its sloping back or in any other way. The idea seems to be a hardy annual.
H. G. BROWNLOW.

REFERENCES.

JONES, J. W. AND KING, G. M. (1952). "The under water activities of the Dipper". *Brit. Birds*, vol. xlv: 400-401.

BROWNLOW, H. G. (1949). "The under-water movements of the Dipper". *Brit. Birds*, vol. xlii: 69-73.

CITRIL FINCH OR TRISTRAM'S SERIN IN SYRIA?

To the Editors of BRITISH BIRDS.

SIRS,—It has for some time been a regrettable symptom of the insular character of our ornithology that field records in British bird journals, referring to birds observed outside our islands, do not receive the same critical treatment as is given to field records from home. It is therefore with little surprise that I read in *British Birds* (*antea*, vol. xlv, p. 75), among supplementary notes to *The Handbook*, the following:

Citril Finch (*Carduelis citrinella*).

DISTRIBUTION ABROAD.—Recorded in Syria (E. M. Cawkell).

I do not know whether either the Editors or Mr. Cawkell are aware that this is the first time the Citril Finch has been recorded outside Europe, yet here we have this statement, plain, unqualified and without the slightest evidence in support of it. Pending further enquiries, I must point out that Tristram's Serin (*Serinus syriacus*) occurs in Syria and is a bird likely to be confused with the Citril. That such a confusion has taken place here is possible in view of the fact that previously (*antea*, vol. xliii, p. 264) Mr. Cawkell appears not to have distinguished very clearly between Tristram's Serin and the common Serin (*Serinus canarius*), and the Citril Finch resembles Tristram's Serin perhaps more closely than does the common Serin.

If such a confusion has taken place, I think that little blame attaches to Mr. Cawkell; when I first saw flocks of Tristram's Serin, I thought I was looking at Citril Finches. But I think that the unqualified publication of the record reflects gravely upon the Editors. So far as I am aware, none of them is acquainted with Syria, the country in question: if that is the case, surely it is their business to consult those who are?

M. F. M. MEIKLEJOHN.

[The above letter has been submitted to Mr. Cawkell, now in the Falkland Islands and separated from his notes. The observation was made seven years ago, and he informs us that after this interval of time he cannot recall much detail beyond the following: a small flock of birds was involved; they rose from the ground on the slopes of Jebel Mazar with an unusually metallic note; and they were found to have completely unstreaked under-parts. This cannot be regarded as substantiation of the identification as Citril Finch, since unstreaked under-parts are also one of the features of Tristram's Serin, and

until there is further verification available, we agree that this record must be treated as uncorroborated. We do not in future propose to publish isolated statements about distribution overseas, except in special cases.—Eds.]

THE 1951 RECORDS OF THE RED-HEADED BUNTING.

To the Editors of BRITISH BIRDS.

SIRS,—May I ask a little of your space in which to protest against your recent treatment of the 1951 crop of Red-headed Buntings (*Emberiza bruniceps*) in the British Isles? In your introduction to "Reports from Bird Observatories" (*antea*, pp. 227-8) you give your view that "none of the 1951 records—double all previous British occurrences—is entirely above suspicion" since some Red-headed Buntings, imported by a London dealer, escaped from captivity in March, 1951. For this reason you have taken the unjustifiable step of placing the Stonehaven and the four bird observatory records within square brackets.

Actual proof that these refer to natural occurrences cannot be demonstrated any more than proof that they represent "escapes": it is therefore right and proper that opinion as to their validity should rest on a reasoned consideration of the circumstances of their appearance at these points. If the concept of migrational drift which I have recently discussed in some detail (*Scot. Nat.* 64, pp. 1-18) has any basis in reality, then the evidence in support of certain of these as natural records is very strong. Such of them as I have examined in this light (and unfortunately I do not have the full series of 1951 weather-charts by me here) almost certainly represent arrivals due to migrational drift through col or anticyclonic systems prevailing over the continent of Europe and embracing, in the early stages, the native area of this bird.

The first occurrence among those that I consider to have been wild immigrants was on the coast of Kincardineshire towards the end of May: Prof. V. C. Wynne-Edwards' view as to its validity (quoted *antea*, p. 228) gains support from the fact that a big intermittent drift of passerine migrants, which clearly originated in south-eastern Europe and the central Mediterranean area, took place at that time (*antea*, pp. 248, 261). I have not yet had an opportunity to examine the meteorological situation at the time of the second occurrence, which was at Lundy on July 14th, but it strikes me as a very odd coincidence that another rare bunting of similar range, an adult male Yellow-breasted (*Emberiza aureola*) should have reached Fair Isle the previous day (*Scot. Nat.* 63, pp. 186-7).

The evidence in support of the Great Saltee record of September 22nd-23rd is overwhelming. This drift took place in the south-easterly airstream of a vast Mediterranean high which also brought a Brown-backed Warbler (*Agrobates galactotes*) and Short-toed Lark (*Calandrella brachydactyla*) to the same island (*antea*, pp. 287-8, 290-1), an Olivaceous Warbler (*Hippolais pallida*) to Skokholm, and a Tawny Pipit (*Anthus campestris*) to Lundy. The conditions at this period constitute such a splendid illustration of the reality of "drift" that I am dealing more fully with it in an analysis of the 1951 autumn migration now in preparation. The truly enormous drift, affecting migrants over a vast area of Europe, which took place at the time of the second Lundy appearance on September 30th, made ornithological history, and under the weather conditions at its commencement one would expect southern and south-eastern elements to reach this country. I understand that Mr. David Jenkins will be dealing more fully with this period in a forthcoming paper in *British Birds*. This leaves only the Fair Isle bird of early August unaccounted for, and I have purposely refrained from comment on this bird as there is some doubt concerning the date of its arrival here.

It is quite inconceivable that whilst some of these "escapes" from a London dealer should have remained in the London area, five others should have found it necessary to travel northwards as far as Stonehaven and Fair Isle, and westwards to Lundy and Great Saltee, in order to find a congenial habitat

when the fields of south-eastern England are full of the grass-seeds on which they could profitably feed. It is also stretching coincidence too far that these birds should have timed their arrival at these distant points to correspond with the appearance of such other southern and south-eastern vagrants as I have mentioned. My own conviction is that these five records (and perhaps also the Brighton one, which ought to be closely examined) are perfectly natural occurrences, in common with those at Lerwick and Fair Isle in 1950, and (dare we prophesy?) with the increasing number we may hope to get in the years to come.

The action of the Editors of *British Birds* in applying "square brackets" only serves to obscure important evidence of what appears to be a westwards expansion of range in this species (and that all the records up to the present refer to adult males is consistent with this view), and one which finds its parallel in other eastern species such as the Greenish Warbler (*Phylloscopus trochiloides viridanus*) (see *Proc. Xth Internat. Orn. Congress*, pp. 527-31 and *Brit. Birds*, 41, p. 119) Red-flanked Bluetail (*Tarsiger cyanurus*) (see *Ornis Fennica*, 29, pp. 27-35 and *Scot. Nat.* 60, pp. 6-7) and the Collared Turtle Dove (*Streptopelia decaocto*).

May I close with an appeal for no more "square-bracketing" of Red-headed Buntings, or other vagrant species, until close examination of the appropriate migration and meteorological records has been made?

KENNETH WILLIAMSON.

Fair Isle Bird Observatory, by Lerwick, Shetland.

[We agree with Mr. Williamson's argument that available migration and meteorological records should be given full consideration and the increase of such data may help to settle doubtful cases even after the lapse of some years. Meanwhile square-bracketing should not be regarded as final rejection, for later evidence may confirm a spread of range. Nevertheless where imported birds are known to have been released or escaped from captivity, we feel bound to take a very cautious line before accepting records as genuine wild immigrants even where a good case can be made out in favour of that possibility. While it is true that birds of this species were still seen at large in the London area in the early spring of 1952, we cannot agree with Mr. Williamson's statement that "it is quite inconceivable" that some "escapes" should travel northwards and westwards to the extremes of Britain for this is a migratory species and the time of year concerned is an appropriate one for movement in that direction.—Eds.]

BOOKS RECEIVED.

- The Birds of Crater Lake National Park.* By Donald S. Farner. (Univ. of Kansas Press, \$1.25, paper).
- The Mandarin Duck.* By Christopher Savidge. (Black, 25s.).
- Bird Lore.* By C. E. Hare. (Country Life, 18s.).
- The Entomology of Bird Pellets.* By P. M. Miles. (Publication of the Amateur Entomological Soc., 1s. 7½d.).
- The Bird-Watchers' Field Pocket Book.* (Seeley, Service, 3s. 6d.).
- Natural Flight and Related Aeronautics: A Bibliography.* By James L. G. Fitzpatrick. (Inst. of Aeronautical Sciences, N.Y., \$3.50.).
- Warn- und Tarntrachten im Tierreich.* By Herbert Bruns.
- Estuary Saga.* By Jeffery G. Harrison. (Witherby, 12s. 6d.).
- Yorkshire Birds.* By Ralph Chislett. (A. Brown & Sons, 25s.).
- Investigations of methods of appraising the abundance of Mourning Doves.* Special Scientific Report: Wildlife No. 17. (U.S. Dept. of the Interior, Washington.).

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BRITISH BIRDS

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MIGRATION IN LATE SEPTEMBER AND EARLY OCTOBER, 1951.

BY

DAVID JENKINS.

INTRODUCTION.

DURING the autumn of 1951 a party from Cambridge University visited south Norway in order to study migration. Towards the end of their visit a large scale passage of many species was observed (Mylne and Hyatt, 1952). On their return it became apparent that migration had been observed at many places throughout western Europe at the same time. In this paper an attempt has been made to collate observations of this movement and to establish some correlation with the prevailing weather conditions. No detailed conclusions can be drawn from fragmentary observations obtained from widely separated stations for a single migratory passage, but it is hoped that the paper may show that this approach can be developed with profit in the future.

As it is thought that it would be unwise to draw any conclusions from a consideration of the meteorological conditions associated with one peak of passage alone, and since observations on the Continent showed that others occurred during September 1951, the weather during the month as a whole is considered and a comparison is made of the climatic features at the time of each peak.

General pattern of migration during September-October, 1951.

Although there were few days in September when no migration occurred, observations on the Continent indicate that there were definite peaks of movement. These peaks were spread over several days. Their existence may be seen by an examination of Tables I, II, III and IV which show the migration of certain Passerine species at observatories in Finland, Sweden, Norway and N. Germany. At the different observatories different species were principally involved. This makes the coincidence of dates (September 6th-9th, 19th-22nd and 29th—October 2nd and slightly earlier in Finland) remarkable and encourages the belief that the initiation of migration in many species may have been due to a common factor or factors.

TABLE I: SIZNILISCAR BIRD OBSERVATORY, FINLAND. MIGRATION SEPTEMBER 12TH-27TH, 1951.

(At this station some birds were migrating to the east, some to the west. In order to establish peaks of passage the totals have been summated).

Species	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	
Woodlark ...	—	—	—	1	—	3	—	—	3	1	1	2	18	18	1	—	
Skylark ...	—	—	2	—	—	5	6	—	6	11	3	3	—	—	6	7	
Nutcracker ...	39	3	89	1	—	162	433	11	33	44	280	1	2	36	6	—	
Robin ...	10	2	—	—	—	—	—	3	—	—	67	135	5	3	5	—	
Meadow Pipit ...	87	81	94	139	—	35	133	6	118	229	194	92	27	95	17	28	
White Wagtail...	48	2	13	23	—	11	7	1	17	1	—	6	2	6	1	—	
Starling ...	44	2	—	5	—	286	39	—	32	—	2	—	—	2	10	—	
Siskin ...	227	100	185	912	6	—	348	48	46	345	301	39	1	1	533	16	
Chaffinch ...	252	130	86	152	—	30	2,054	40	52	243	430	57	3	3	4,374	3,691	
					MINOR PEAK			PEAK							MAJOR PEAK		

Explanation of the Tables.

For diurnal migrants the figures represent counts of all birds seen flying past the observation posts from shortly after dawn until migration ceased.

For nocturnal migrants the figures represent daily counts, made in a specified area, of birds which had arrived during the night.

A dash (—) indicates that a watch for migrating birds was kept, but none was seen.

Where migrating birds were recorded, but actual counts not made, the relative numbers seen are indicated by the following signs :

- ‡ shows that the species was observed.
- shows that less birds were present than on the previous day.
- + shows that more birds were present than on the previous day, while (++) or three (+++) plus signs indicate heavier or very heavy passage.

TABLE II: SELECTED DIURNAL MIGRANTS SHOWING PEAKS OF PASSAGE AS RECORDED IN SWEDEN, September.

OTTENBY. Species	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
Sparrow Hawk	1	3	3	7	—	8	32	6	7	1	—	—	—	1	—	—
Kestrel ...	2	1	—	—	—	—	1	4	1	—	—	—	—	—	—	—
Crane ...	—	—	—	—	—	—	9	275	299	122	11	—	—	—	—	—
Dunlin ...	—	15	—	10	—	626	472	204	189	171	15	15	100	75	—	—
Black-headed Gull	3	—	—	12	—	9	75	213	240	85	17	2	—	—	—	—
House Martin	178	460	190	575	20	6,771	1,982	200	—	—	—	—	—	—	35	3
Tree Pipit ...	25	81	—	40	—	96	18	30	19	24	—	—	—	5	2	4
White Wagtail	323	730	—	935	—	2,172	5,572	2,665	3,587	1,383	1,277	310	5,900	2,210	257	—
Starling ...	—	18	—	—	—	14	—	—	—	22	17	15	—	—	—	—
Linnet ...	—	—	—	75	—	—	—	—	—	—	—	—	—	—	—	—

PEAK

September.

October.

OTTENBY. Species	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	1st	2nd	3rd
Sparrow Hawk	—	—	6	19	19	27	11	5	—	—	—	—	—	—	—	—	—
Kestrel ...	—	—	12	6	5	5	—	—	—	—	—	—	—	—	—	—	—
Crane ...	—	—	117	372	62	25	—	—	—	—	—	—	—	—	—	—	42
Dunlin ...	114	59	411	129	4	97	50	16	32	—	15	—	413	1	—	—	19
Black-headed Gull	—	—	—	109	—	10	6	—	—	—	573	—	555	378	6	6	—
House Martin	—	—	166	20	—	10	—	—	—	—	—	—	—	—	—	—	—
Tree Pipit ...	32	12	37	10	1	13	31	24	—	—	83	—	32	2	35	20	—
White Wagtail	251	23	1,870	1,323	1,139	8,381	253	1,090	196	—	798	—	1,980	308	77	110	90
Starling ...	—	—	—	15	—	13	62	—	104	—	141	—	1,677	149	101	102	—
Linnet ...	—	—	11	—	217	385	744	561	132	8	999	—	5,030	1,017	175	281	40

PEAK

PEAK

TABLE III: SELECTED MIGRANTS (DIURNAL UNLESS OTHERWISE INDICATED) SHOWING PEAKS OF PASSAGE AS RECORDED IN NORTH GERMANY.

SPECIES	September.															
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th
Blackbird	—	—	—	—	+	—	—	—	—	—	—	+	—	—	—	—
Thrush*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Song*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Chaffinch*	—	—	++	—	—	—	—	—	—	—	—	—	—	—	—	—
Robin*	—	—	++	—	—	—	+++	+++	+++	+++	—	—	—	—	—	—
Starling*	—	—	—	—	—	—	—	+++	—	—	—	—	—	—	—	—
Fieldfare*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Wood Pipit	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pipit	—	—	—	—	—	—	—	—	++	—	+	—	—	—	—	—
Wren	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

PEAK

SPECIES	September													October.			
	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	1st	2nd	3rd
Blackbird	—	—	+	—	—	—	+	‡	‡	+	‡	‡	‡	+	++	++	—
Thrush*	—	—	++	+	+	—	—	—	—	—	—	+	‡	—	+++	+++	+++
Song*	—	—	++	—	—	—	—	—	—	—	—	—	—	—	+++	+++	+++
Chaffinch*	—	—	—	—	—	—	—	—	—	—	—	+	—	—	+++	+++	+++
Robin*	—	—	+	—	—	—	—	—	—	—	—	—	—	—	+	—	—
Starling*	—	—	—	—	+++	—	—	—	+	—	—	—	—	—	+++	+++	+++
Wood Pipit	—	—	—	—	—	—	—	—	—	++	++	++	++	++	++	‡	‡
Pipit	—	—	—	—	—	—	—	—	—	—	—	—	—	—	++	++	++
Wren	—	—	+	—	—	—	—	—	—	—	—	—	—	—	+++	+++	‡

PEAK

PEAK

Night migrant.

TABLE IV: SELECTED DAY MIGRANTS SHOWING PEAKS OF PASSAGE AS RECORDED IN SOUTH NORWAY.

SPECIES	September.													October.			
	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	1st
Blackbird	—	—	—	—	21	1	—	17	—	—	—	—	—	—	77	2	—
Wood Pipit	—	—	—	—	22	135	—	3	—	—	—	15	—	—	69	7	—
Wagtail	—	—	—	—	13	9	11	5	—	—	7	2	—	—	6	4	—
Starling	—	—	—	—	147	61	3	55	24	—	21	16	5	—	479	595	—
Robin	—	—	—	—	2	37	9	2	—	—	—	11	—	—	119	93	—
Fieldfare	—	—	1	—	120	45	47	2	—	—	—	—	5	—	108	176	—
Wren	—	—	—	—	13	4	—	67	—	—	41	28	—	—	17	110	—
Wren	—	123	—	—	773	582	78	68	553	—	—	44	—	—	13,555	11,807	—

Observations discontinued on October 1st)

PEAK

PEAK

SPECIES	September.													Oct.			
	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	1st
Wood Hawk	—	—	—	—	2	—	2	20	+	—	—	1	1	—	—	—	—
Blackbird	50	50	70	300	100	100	500	50	15	40	30	‡	‡	‡	‡	‡	‡
Wood Pipit	‡	‡	‡	‡	‡	++	‡	‡	+++	‡	‡	‡	‡	‡	+++	+	+++
Starling	—	—	—	—	6	—	—	10	—	—	—	—	—	—	—	—	—
Robin	—	—	30	80	40	60	400	400	100	20	300	100	120	300	100	20	‡
Fieldfare	—	—	3	12	30	40	50	»	»	‡	10	15	30	15	40	‡	‡
Wren	—	—	—	—	—	3	3	50	6	—	—	1	3	10	40	6	+++
Hammer	—	—	6	—	25	30	45	100	20	3	10	2	10	30	40	20	6
Counting	—	—	15	2	4	10	20	10	—	—	1	—	1	4	—	1	2

PEAK.

PEAK

INGEN.

There was a marked peak of migration on September 9th, 10th, 11th: most noticeable were birds of prey of which at least eight species were on passage. The movement also involved many species of Passerines. Compared with the intervening period there was another marked wave beginning on September 19th and lasting until September 23rd.

THE WEATHER.

Analysis of weather conditions at the place of origin of these birds may give some idea of the extrinsic factors which initiated the migration. It is reasonable to assume that many of the birds which migrate through western Europe breed in Norway, Sweden and Finland. Weather conditions in these countries will, therefore, be considered in relation to migration in September, 1951.

It is not to be supposed that a precise correlation between migratory behaviour and any single weather factor may be found, since the latter are possibly additive in effect, and since the internal state of the bird must be taken into account. Hinde (1951) has considered some of the complications of this approach to the study of bird migration.

General pattern of weather.

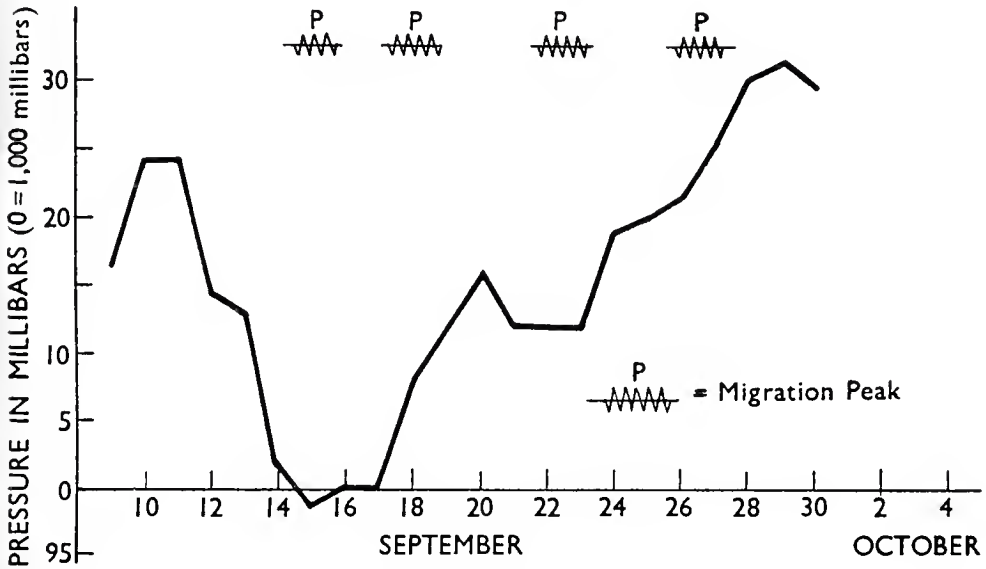
At the beginning of September pressure over much of Europe was low, but an anticyclone built up over France and moved to the east. It was followed by another high pressure area coming from the Atlantic which moved across Britain and on September 9th was centred off the west coast of Norway. This "high" then proceeded south-east across Europe and was succeeded by low pressure weather which lasted till September 17th. On this date a ridge of high pressure extended across France and Germany from an anticyclone centred west of Ireland.

Pressure over northern Europe was still low, but began to rise on September 19th and 20th as this "high" moved east. However, it did not proceed as far north as Norway but changed to an easterly direction. By September 23rd it was centred near the Black Sea. Meanwhile the barometer had dropped again in the north. The "high" centred near the Black Sea intensified and began to move to the north on September 26th. On September 27th pressure was high over a large area of eastern and north-eastern Europe extending from Bear Island to the Black Sea. The movement to the north continued and took on a westerly component so that on September 29th the anticyclone was centred over Finland. It then moved to the south-west and at the end of the month its centre was over southern Norway.

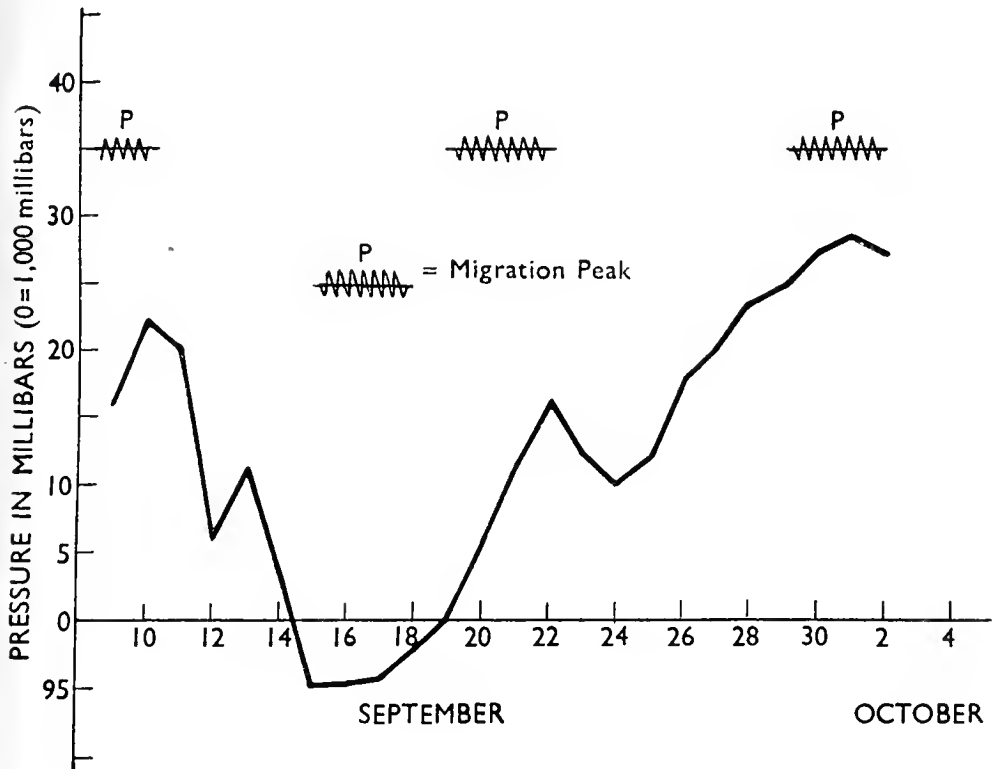
Detailed consideration of weather.

In general the weather conditions associated with high barometric pressure (anticyclones) in summer include light winds and clear skies. Winds blow outwards in a clockwise direction from areas of high pressure and inwards in an anticlockwise direction towards depressions. Thus, in uncomplicated circumstances, winds to the south of an anticyclone will be easterly and to the north, westerly. In late September, 1951, there was a gradual build-up of anticyclonic weather conditions over practically the whole of northern Europe

as a high pressure centre was transferred from the Black Sea to southern Norway. As the anticyclone moved westwards so were the regions to the south of it exposed to easterly winds.



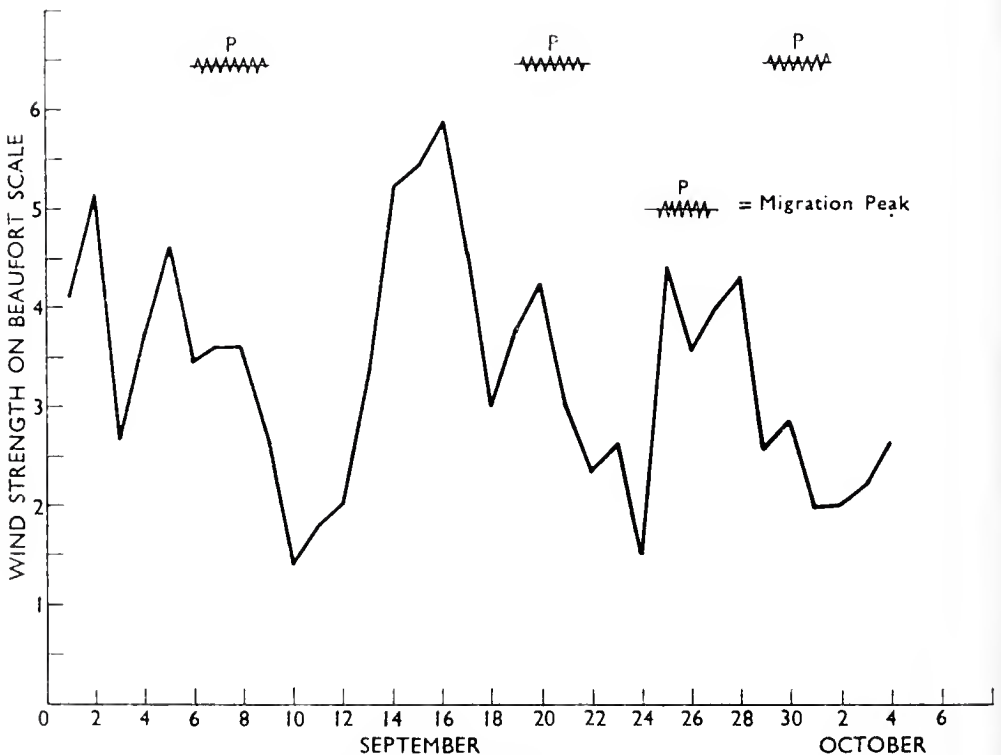
GRAPH I: BAROMETRIC PRESSURE IN FINLAND (64°N.).



GRAPH II: BAROMETRIC PRESSURE IN NORTH-CENTRAL NORWAY AND SWEDEN (68°N.).

Barometric pressure.

As is shown in Graphs I and II, pressure was high over Scandinavia at the times of peak migration in Sweden, Norway and in North Germany. Finland was, however, under the influence of low pressure centres on September 15th and 18th when minor peaks occurred. The major peak at the end of the month took place when the barometer was rising sharply. However, it is difficult to believe that birds can be sensitive to pressure changes as such and for this reason further consideration of isobaric patterns has not been attempted.

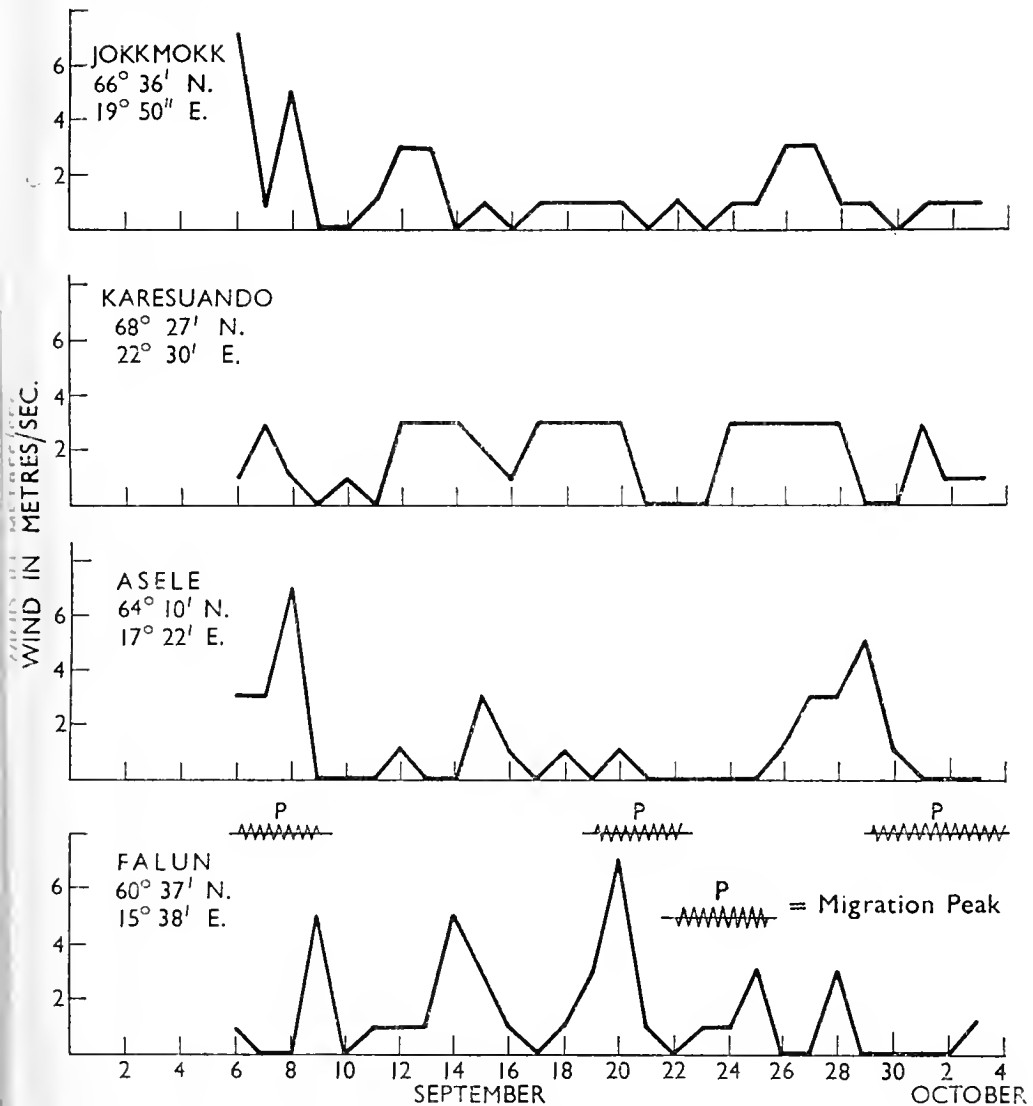


GRAPH III : WIND STRENGTH—SUMMATION FOR SCANDINAVIAN STATIONS.

Wind.

In Graph III units of wind measured as steps on the Beaufort Scale have been totalled for 20 stations in Scandinavia. There is a marked drop in wind from September 5th-10th, from September 16th-24th and from September 28th-October 2nd. These periods of reduced wind strength correspond fairly accurately with the periods of peak migration.

A more detailed analysis of wind conditions at stations in Sweden and Finland has also been undertaken (Graphs IV and V). At no time was there much wind. There were no periods of absolute calm over the whole of either country, but in Sweden there were



GRAPH IV : WIND AT FOUR REPRESENTATIVE INLAND SWEDISH STATIONS.

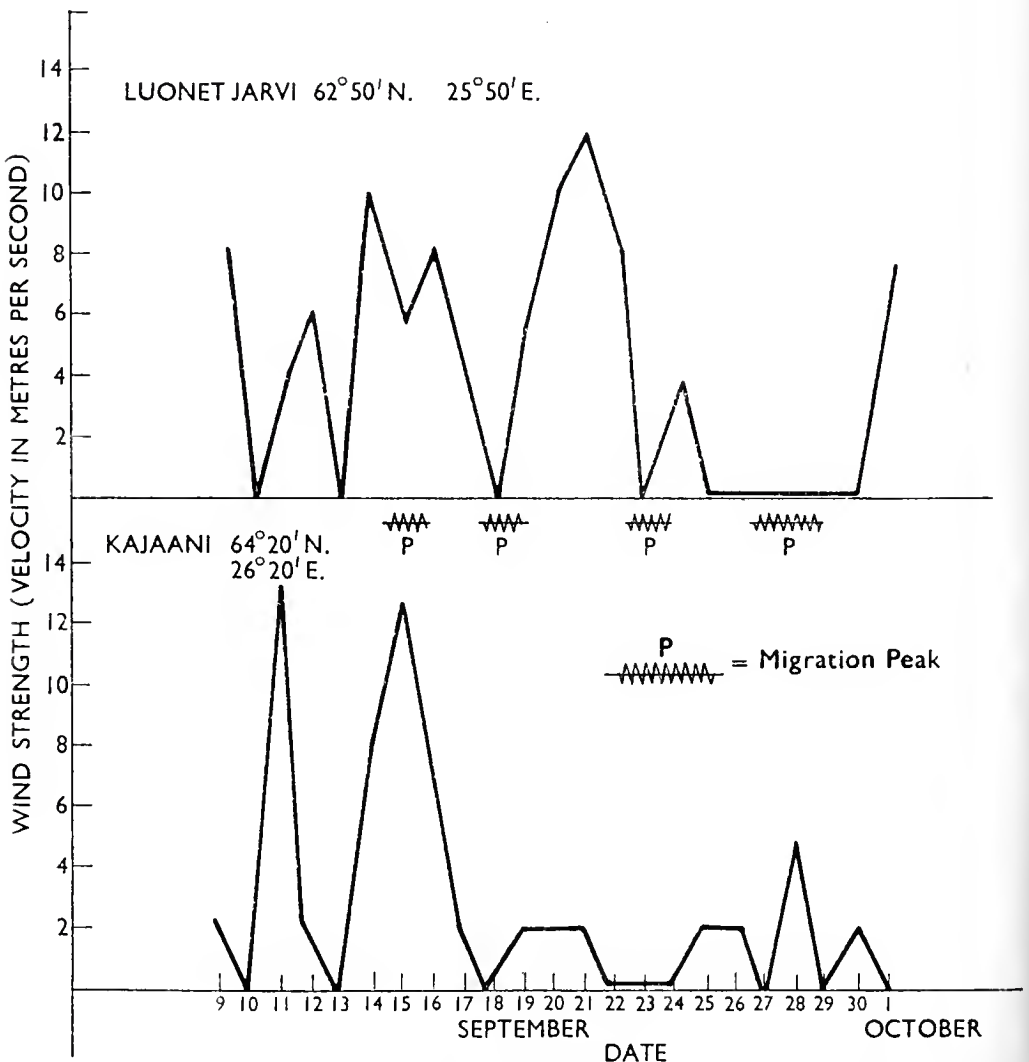
some which approached this. These were September 9th-11th, 16th-17th, 20th-23rd, 29th-30th. Peak migration at Ottenby (the Swedish Bird Observatory at the southern tip of Öland in the Baltic) occurred on September 7th-8th, 19th-21st and 29th. Records from the Finnish Bird Observatory at Sizinliscar show that peaks of migration occurred there on September 15th, 18th, 23rd (Robins only) and 26th-27th (See Table I). Graphs V and VI show that there was as much wind on September 15th as on any other day in the period for which migration records are available, but that calm conditions prevailed on September 18th, 23rd and 26th-27th.

It is suggested by Williamson (1952) that calm weather may provide an active stimulus for the initiation of migration. The

weather conditions associated with most of the waves of migration in September, 1951, may perhaps be regarded as supporting this view, although those at the time of the earliest peak in Finland cannot.

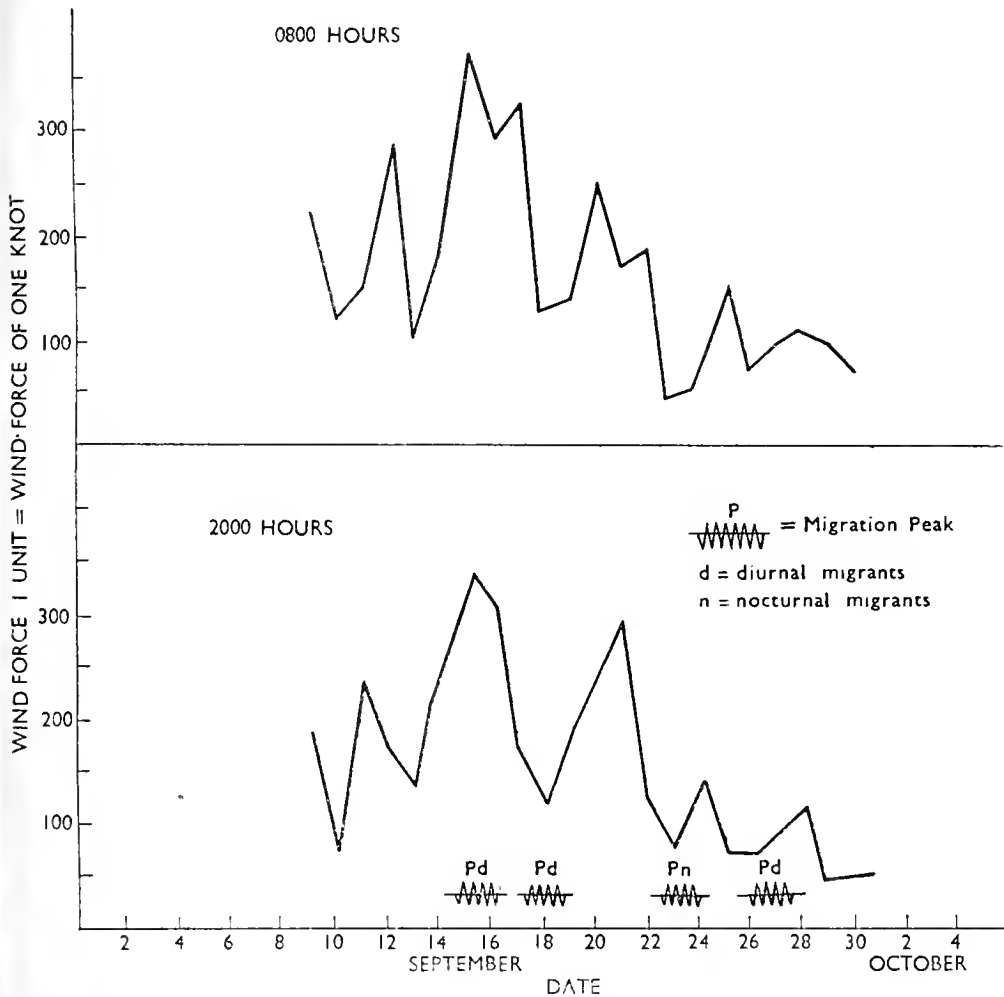
It is, however, unknown exactly where the birds came from and the evidence is suggestive that lack of wind may be one of a series of heterogeneous external stimuli which mount up, especially as there was a fall in temperature of 29 degrees Fahrenheit between September 7th and 10th and of 14 degrees overnight on September 14th-15th in central Sweden.

It has long been known that the direction of the wind is all important in determining whether birds are drifted across the North Sea to British shores (Rintoul and Baxter, 1918). This was well shown in September, 1951. During the earlier peaks of passage



GRAPH V : WIND STRENGTH AT TWO FINNISH STATIONS AT DIFFERENT LATITUDES.

on the Continent when winds across the North Sea were in the main westerly few birds came to Britain. When the winds were easterly, as at the end of the month and in early October, many vagrants were recorded at British observatories. (The mechanics of the process of migrational drift by wind are considered in Williamson, 1952).



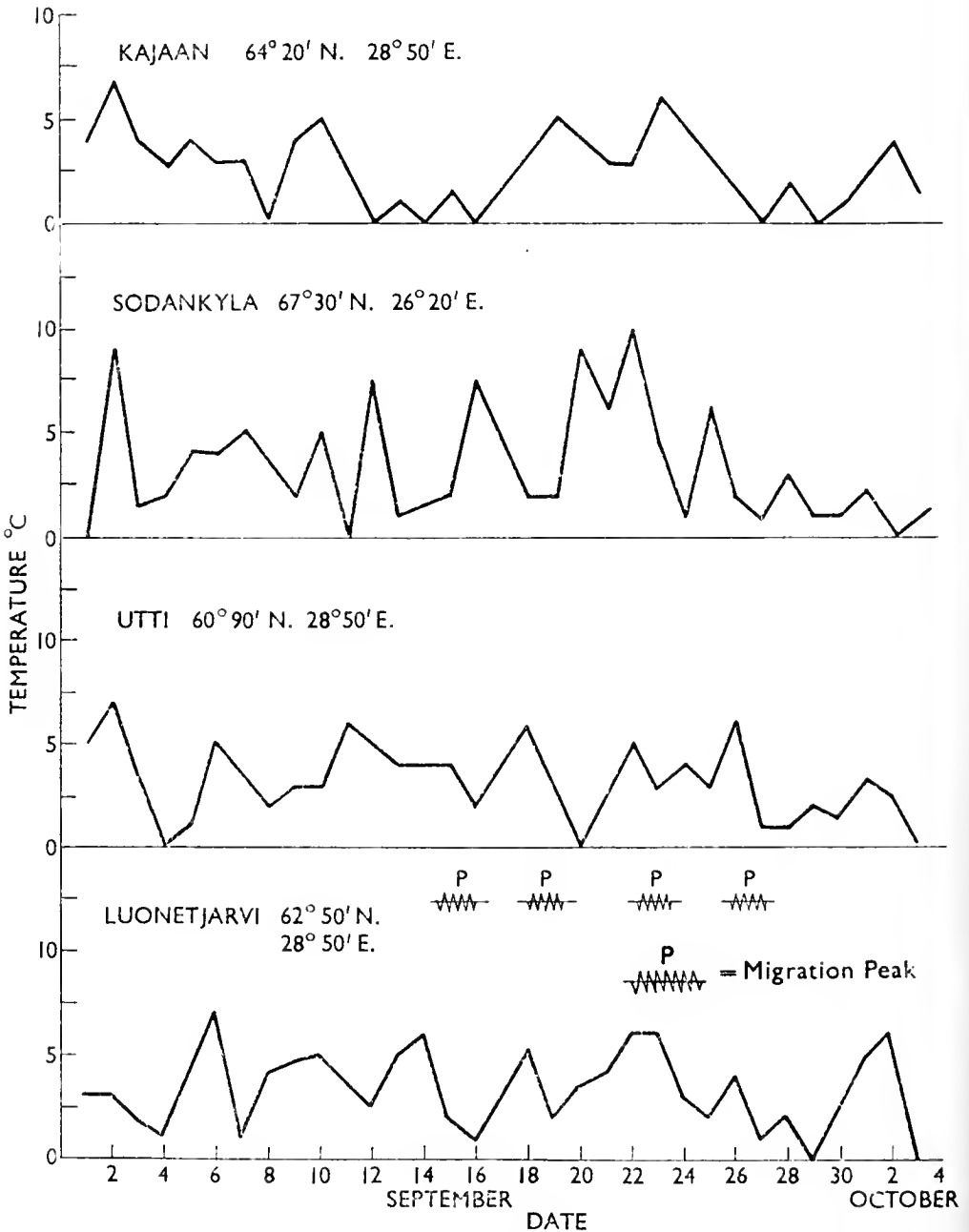
GRAPH VI: WIND FORCE FINLAND—SUMMATION 32 STATIONS.

Temperature.

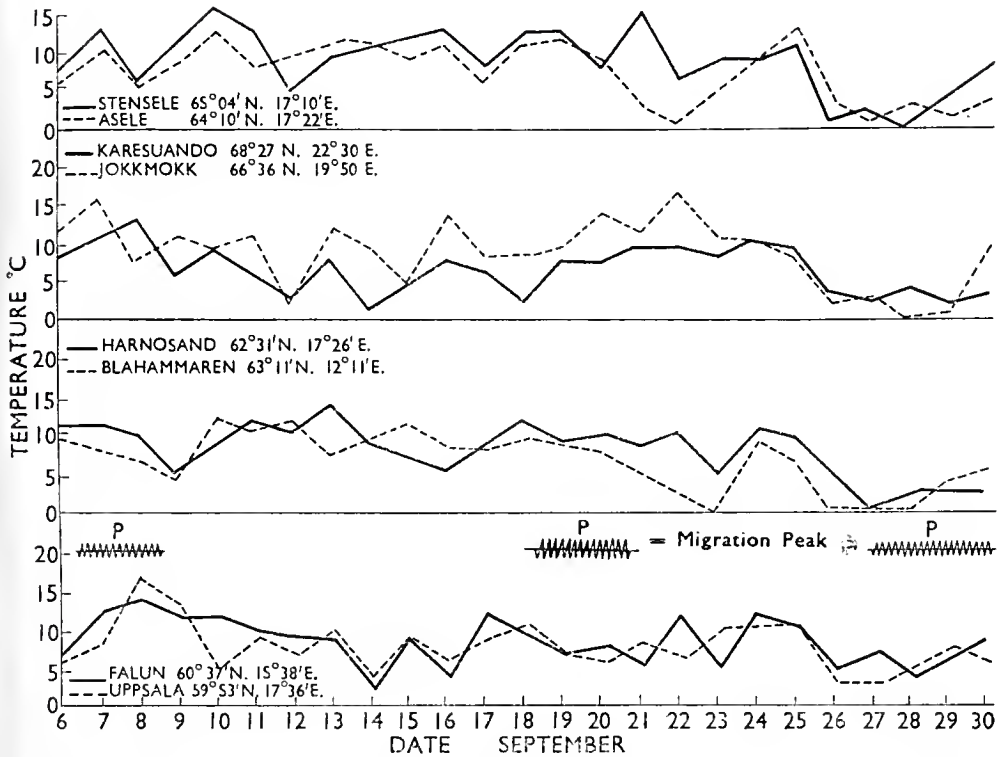
Eagle Clarke (1912) found that "movements did not begin in earnest until a decided fall in temperature took place." and he decided that this factor was the precursor of each of the pronounced movements he studied. Ritchie (1939), in his detailed study of a single Waxwing (*Bombycilla garrulus*) invasion, on the other hand, concluded that "the most favourable condition for departure seems to be a temperature which has remained steady for two or three days."

Temperature may, then, be considered under two headings :—
 (a) *Daily variation* (maximum minus minimum).

Graphs VII and VIII show the daily variation in temperature at Finnish and Swedish Stations. In each case the variation was reduced towards the end of the month when the major peak occurred. However, the variation was great in the middle of the month when the other waves were observed.



GRAPH VII: DAILY VARIATION IN TEMPERATURE (MAXIMUM MINUS MINIMUM)—FINLAND.



GRAPH VIII : DAILY VARIATION IN TEMPERATURE (MAXIMUM MINUS MINIMUM) AT SWEDISH STATIONS.

(b) *Mean change from one day to the next.*

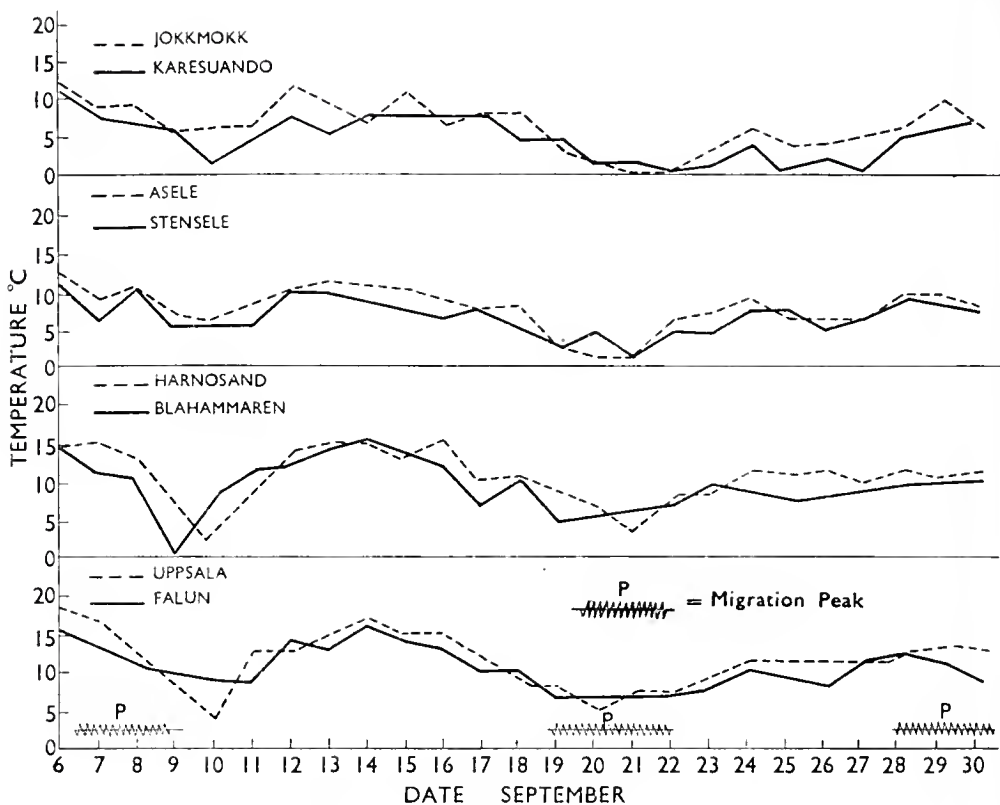
Mean temperature changes at four stations at different latitudes in both countries are represented in Graphs IX and X. These give an overall picture of the changes in Sweden and Finland as a whole. They show that the mean temperature dropped gradually from September 6th to 10th and from 17th or 18th (earlier in Finland) to 20th. If anything there was an overall rise in mean temperature in these countries at the end of the month, but analysis of the figures given in the Daily Weather Reports of the Meteorological Office for all Scandinavian stations (including Norway, but not Denmark) shows that during the period September 7th-30th a fall in temperature of 10 or more degrees Fahrenheit occurred as follows:—

north of 65 degrees north latitude, on September 18th-19th, 19th-20th, 20th-21st, 26th-27th, 29th-30th ;

between 60 and 65 degrees north, on September 14th-15th, 17th-19th, 25th-26th ;

south of 65 degrees north, on September 7th-8th, 8th-10th, 19th-20th, 28th-29th, at different stations.

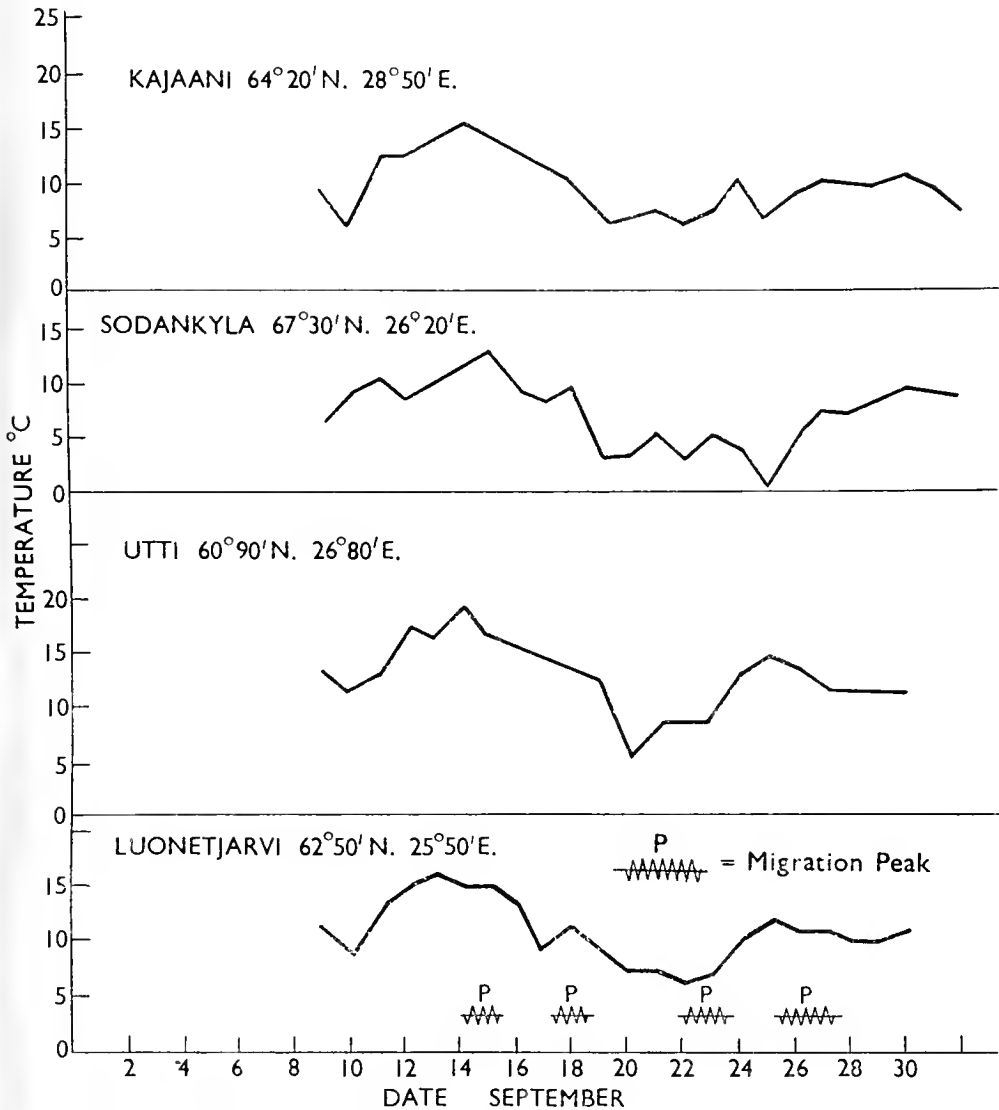
Thus before all the migration peaks in September, 1951, there was a notable fall in temperature, of 10 degrees Fahrenheit or more, somewhere in Scandinavia. Before the first wave there was a drop



GRAPH IX : MEAN TEMPERATURE AT REPRESENTATIVE SWEDISH STATIONS.

of 11 degrees between September 7th and 8th and of 12 degrees between September 8th and 10th (making in all a fall of 23 degrees between 7th and 10th) in south-west Sweden, before the second a drop of 11 degrees at Haparanda (extreme north of Baltic), of 17 degrees at Hammerfest (north Norway), of 11 degrees in western Finland, of 13 degrees in central Finland and of 12 degrees in south-central Sweden between September 17th and 20th (the drop occurring within 48 hours at most of these places), and before the last peak a drop of 10 degrees on 25th-26th in central Finland, of 14 degrees on 26th-27th at Narvik (north Norway), of 13 degrees on September 28th-29th in south-central Sweden, and of 11 degrees on 29th-30th in western Finland.

It seems significant that all the periods during which temperature fell markedly were succeeded by movements of birds. The places where birds were seen migrating were, however, generally different from the stations where the temperature drop was recorded. This is why it has been thought worth while to plot the recordings for the whole period at representative stations at different latitudes throughout Sweden and Finland. Perhaps in this way an overall picture of the temperature changes can be obtained. The first two migration peaks were associated with a marked drop in temperature at certain places and a gradual fall in temperature throughout

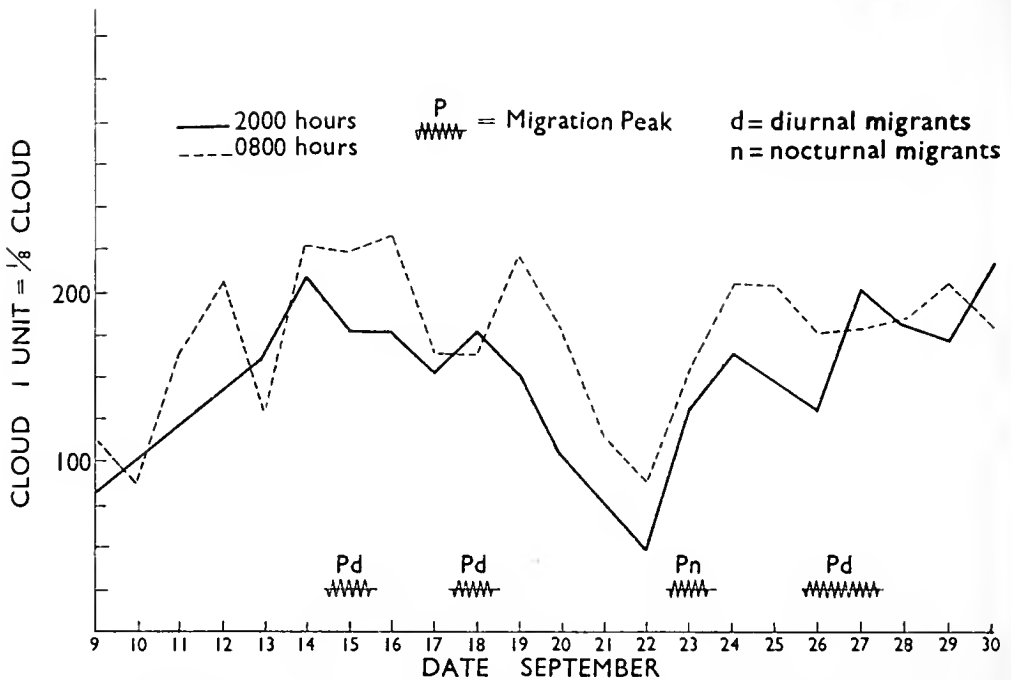


GRAPH X: MEAN TEMPERATURE CHANGES AT REPRESENTATIVE FINNISH STATIONS.

Scandinavia as a whole. The last, and major, peak in which it is known that birds from Norway and Sweden and/or Finland were involved, was associated with a marked drop in temperature in some places in all three countries but with a steady temperature, with minimum daily variation, over the remainder of the area.

Cloud.

The cloud situation in Finland in September, 1951, is represented in Graph XI. Cloud density was high when the peaks of diurnal migration occurred, September 15th, 18th and 26th-27th, but it was at its lowest prior to the maximum nocturnal (Robin) migration on September 23rd. The importance of cloud density in relation to migration is considered below. Figures are not available for cloud density over Sweden.



GRAPH XI: TOTAL CLOUD FINLAND—SUMMATION 32 STATIONS.

Fog.

There was little fog over Scandinavia prior to September 23rd, but after that it was more or less foggy or misty over southern Sweden until October 5th and over southern Finland from September 25th to 29th. There was slight fog in the Kattegat on September 25th and 28th, heavy mist over the entrance to the Gulf of Finland on September 26th and 28th, with fog over Denmark and extreme south Norway on the morning of September 29th, and widespread fog over the Baltic on October 1st. On this day there was mist over the sea between the Gulf of Finland and Öland and also off the south-west coast of Norway. On October 2nd there was mist over south-west Sweden and the Kattegat extending over the land to the sea west of Denmark.

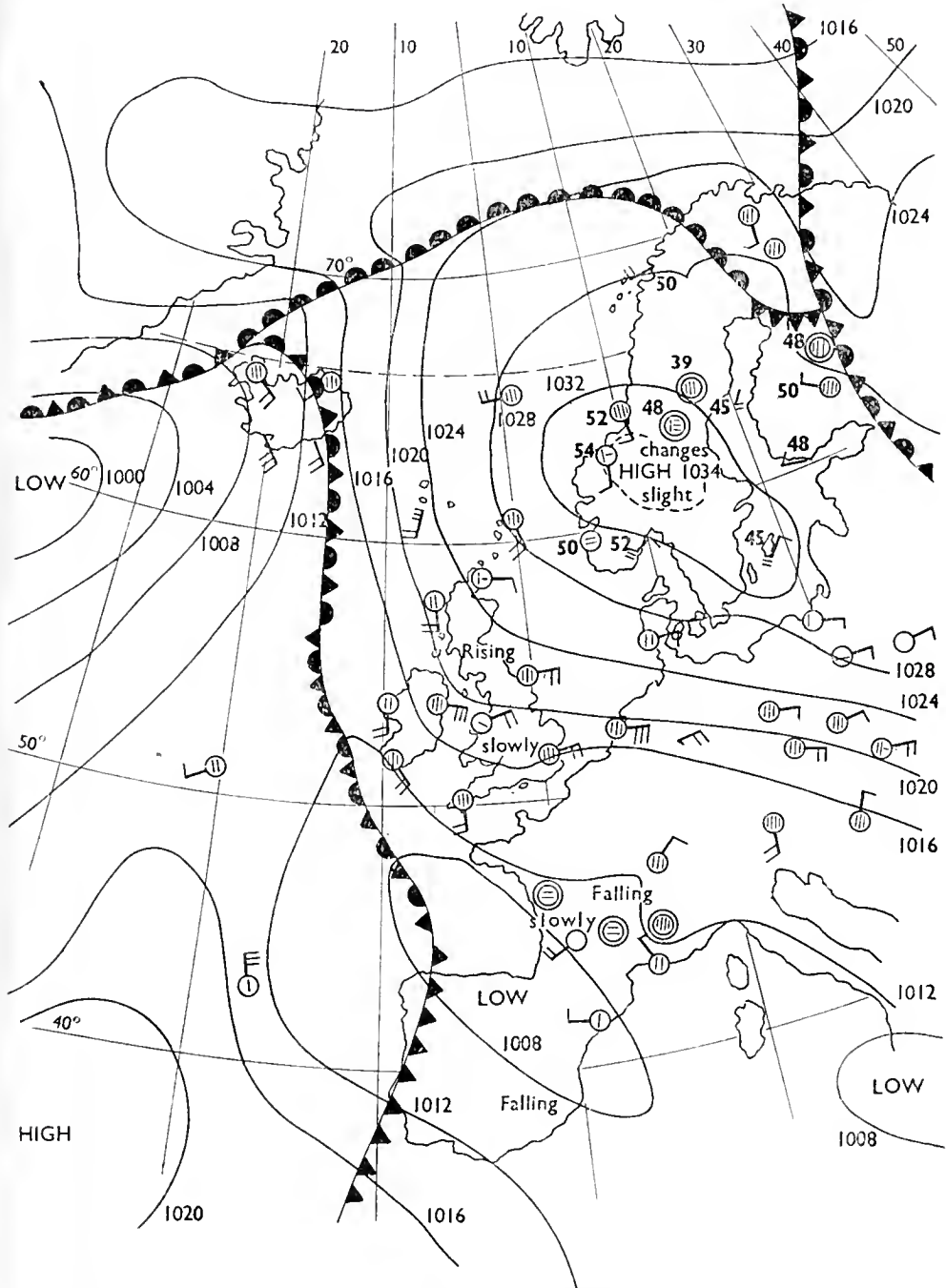
There was still mist over the Kattegat and Denmark on October 3rd and 4th, but thereafter it decreased.

Summary.

	<i>First peak.</i>	<i>Second peak</i>	<i>Third and main peak.</i>
1.	High barometer	High barometer (not Finland)	High barometer
2.	Overall fall in wind strength	Ditto, except in Finland during peak of 15th	Undoubted fall in wind strength everywhere
3.	Very marked temperature fall in central Sweden	Marked temperature fall in all three countries	Marked temperature fall in all three countries succeeded by minimum temperature variation
4.	Temperature variation great	Temperature variation great	—

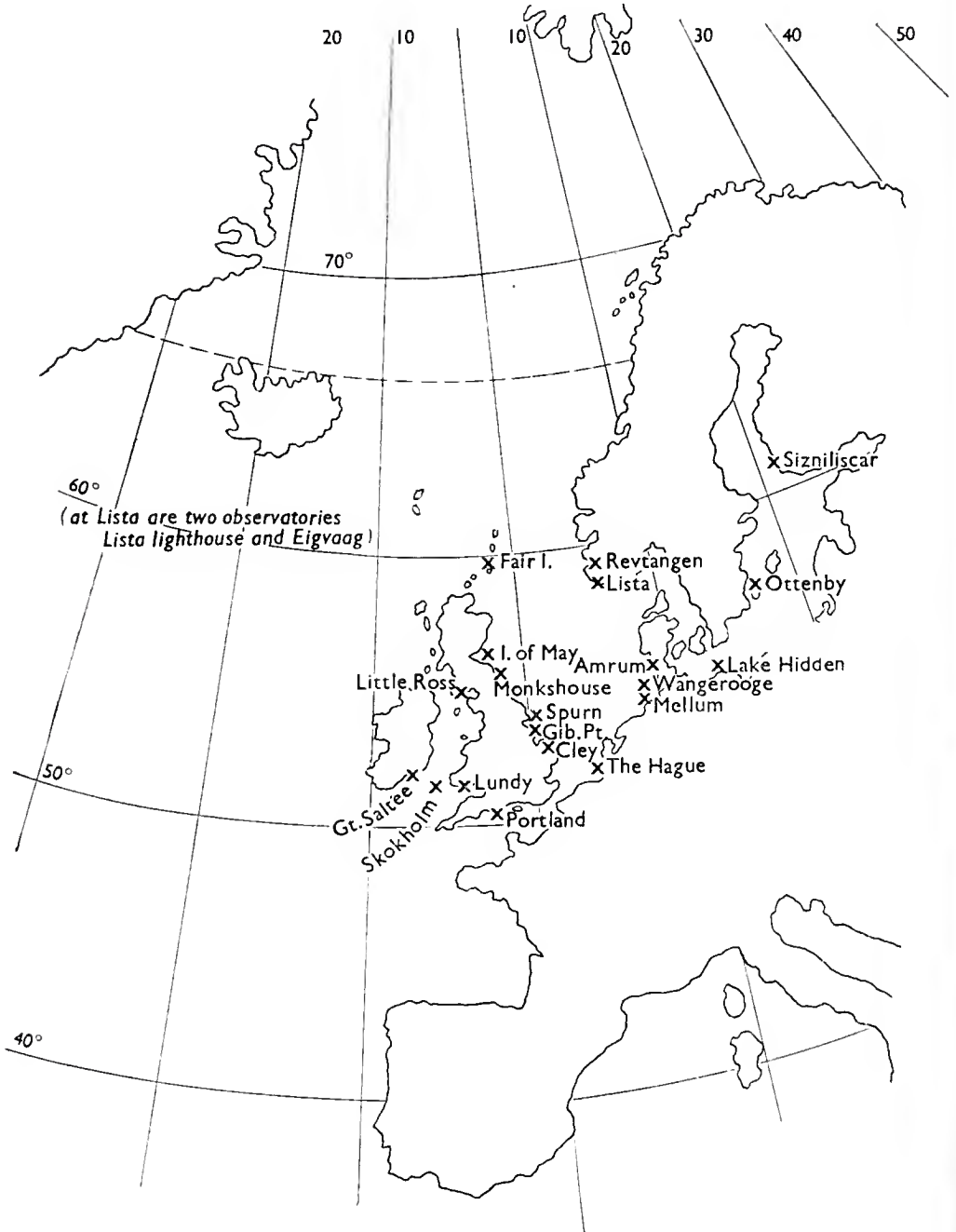
Summary (continued).

- | | <i>First peak.</i> | <i>Second Peak.</i> | <i>Third and main peak.</i> |
|----|--------------------|--|--------------------------------------|
| 5. | — | High cloud density diurnal migrants.
Low cloud density nocturnal migrants | High cloud density diurnal migrants. |
| 6. | — | — | Fog over southern Scandinavia |



MAP I : WEATHER CONDITIONS ON OCTOBER 1ST, 1951, 0600 HRS.

Climatic factors acting on birds at the end of September, 1951, included anticyclonic weather conditions, extending over practically the whole of northern Europe, minimum wind strength and a marked fall in temperature over a wide area succeeded by minimum temperature variation. From a consideration of the opinions of other workers and of weather conditions at the times of earlier migration



MAP II : BIRD OBSERVATORIES MENTIONED IN THE TEXT.

waves during the month, it seems that these conditions are very favourable for migration. Thus it is not surprising that very large numbers of migrating birds were seen at many places in northern and western Europe at this time.

THE COURSE OF THE MIGRATION PEAK AT THE END OF SEPTEMBER.

The gradual build up of anticyclonic weather conditions over the greater part of Europe at the end of September, 1951, suggests that birds may have been on the move over a very large area towards the end of the month. This is confirmed by the records from west European observatories about this time of such more eastern species as Brown Flycatcher (*Muscicapa latirostris*), Yellow-breasted Bunting (*Emberiza aureola*), Petchora Pipit (*Anthus gustavi*) and Yellow-browed Warbler (*Phylloscopus inornatus*). These should not be regarded as lost stragglers, but as interesting clues to the state of migration in other parts of Europe.

In the account of migration which follows, the period under review is from September 25th to October 10th or for as much of it as there is information available. Only the movements of certain representative species will be discussed. These will be considered in two groups, as diurnal and nocturnal migrants. The distinction between these two groups is not always clear cut since some species may start to migrate in the day time on one occasion and at night on another, but it is believed that without it the pattern of the late September/early October migration of 1951 cannot be understood.

In this period there is little evidence for the arrival of birds in Great Britain before the beginning of October. However, marked passage was seen in Scandinavia on September 26th at the Finnish observatory at Sizniliscar, including Robins (probably the birds which were later recorded further west) on September 22nd and 23rd. At Ottenby the situation was slightly complicated as there was fog on September 26th and 28th, but there was a major movement on the 27th, and it was found at Lista, S. Norway, that small Passerines suddenly appeared in the garden of the ringing station on the same day. These were nocturnal migrants. At Eigvaag, the principal watching post on the Lista peninsula, diurnal migration recommenced equally suddenly. There had been little to see since September 23rd and then on September 29th nearly 15,000 birds were counted flying past within a few hours.

It is not, of course, possible to assume that these peak dates represent the start of migration in Scandinavia since the movements at Sizniliscar, Ottenby and Eigvaag were definitely onrushing waves (as contrasted with those arrested by bad weather—see Bagg *et al*, 1950). However, it is unlikely that the migration started much before September 26th, in the far north.

The dates of peak migration at the various observatories are best summarised in tabular form, as on the next page.

Country.	Station.	Passage beginning.	Peak.
1. Finland	Sizniliskar	Sept. 26th	Sept. 26th-27th
2. Sweden	Ottenby	Sept. 27th	Sept. 29th-30th
3. Norway	Revtangen, Stavanger	Sept. 26th	Sept. 29th-30th
	Lista (night migrants)	Sept. 27th	Sept. 30th
	(day migrants)	Sept. 29th	Sept. 29th-30th
4. N.E. Germany	Rugen	Sept. 28th	early October
5. N.W. Germany	Wilhelmshaven	no well defined peak	high migration early October
	Wangerooge) Mellum) Amrum)	Sept. 26th	October 1st-2nd
6. Holland	The Hague	Sept. 28th	October 3rd
7. Great Britain	Cley	Sept. 29th	October 1st
	Gibraltar Point	Sept. 30th	Oct. 1st-2nd
	Spurn Head	Sept. 30th	Oct. 1st-3rd
	Isle of May	Oct. 1st	Oct. 1st-2nd
	Fair Isle	Sept. 30th	Oct. 1st-3rd
	Little Ross	Oct. 3rd	Oct. 4th
	Lundy	Oct. 2nd	Oct. 2nd
	Skokholm	Oct. 2nd	Oct. 2nd (?)
	Great Saltee	Oct. 1st	Oct. 2nd (no real peak)

Channel Islands—no comparable movement of Passerines.

Tables showing the details of migration at these observatories can be seen here and elsewhere in this paper (pages 78, 79, 96 and part 2 (April).

The locality of each Observatory is shown on Map II.

TABLE V: OTTENBY. NUMBERS OF SOME DAY MIGRANTS SEEN DEPARTING.

Species.	September.						October.
	25th	26th	27th	28th	29th	30th	1st
Woodlark ...	—	—	50	—	—	—	2
Skylark ...	—	—	12	—	165	142	83
Meadow Pipit ...	2	—	27	—	138	6	1
White Wagtail ...	196	—	798	—	1,980	368	74
Starling ...	104	—	141	—	1,677	149	161
Greenfinch ...	—	—	17	—	125	—	6
Siskin ...	22	—	73	—	300	11	2
Linnet ...	132	8	900	—	5,030	1,017	475
Chaffinch ...	—	—	588	—	318	22	169
Brambling ...	—	—	15	—	—	4	213
Yellowhammer ...	15	—	224	—	252	90	—

TABLE VI: EIGVAAG, S. NORWAY. NUMBERS OF SOME DAY MIGRANTS SEEN DEPARTING.

Species.	September.					
	25th	26th	27th	28th	29th	30th
Woodlark ...	—	—	—	—	56	80
Skylark ...	—	—	—	—	77	2
White Wagtail ...	7	2	—	—	6	4
Starling ...	—	11	—	—	119	93
Greenfinch ...	—	—	—	—	11	52
Siskin ...	—	—	5	—	108	176
Linnet ...	41	28	—	—	17	110
Chaffinch ...	—	44	—	—	13,550	11,800
Brambling ...	2	—	—	—	129	1,369
Yellowhammer ...	10	37	29	—	28	44

(Records from Lista Fyr, the ringing station, show that the finch migration continued on a large scale on October 1st).

TABLE VII: REVTANGEN, SOUTH NORWAY. NUMBERS OF SOME DAY MIGRANTS SEEN DEPARTING ON SEPTEMBER 29TH, 1951.

Skylark	400 plus
Great Tit	15
Blue Tit	195
Fieldfare	13
Meadow Pipit	450
Greenfinch... ..	12
Siskin	4
Linnet	36
Twite	60-70
Crossbill (<i>Loxia curvirostra</i>)	12
Parrot Crossbill (<i>Loxia pytyopsittacus</i>)... ..	28
Chaffinch	600
Brambling	85

(Counts not usually made—peak passage on October 1st).

TABLE VIII: LISTA FYR. NUMBER OF NIGHT MIGRANTS SEEN.

	September.					October.		
	25th	26th	27th	28th	29th	30th	1st	
Wren	4	1	3	3	2	6	†	
Song Thrush	—	—	2	—	—	2	†	
Redwing	—	—	—	+++	†	†	†	
Redstart	2	2	7	—	6	15	4	
Robin	—	—	1	2	6	20	†	
Blackcap	—	—	2	—	—	1	2	
Garden Warbler	—	—	2	—	3	—	5	
Willow Warbler	—	—	3	2	2	5	3	
Goldcrest	—	—	—	—	1	10	15	
Pied Flycatcher	—	—	—	5	5	1	4	
Dunnock	—	—	1	1	—	—	3	

(Passage beginning on 27.ix. Redwing peak on 28.ix. Main passage on 30.ix).

TABLE IX: OTTENBY. NUMBER OF NIGHT MIGRANTS RINGED.

	September.					October.			
	25th	26th	27th	28th	29th	30th	1st	2nd	3rd
Song Thrush	8	—	1	11	21	12	7	11	2
Redwing	—	—	—	1	—	—	—	—	—
Redstart	—	—	—	—	—	—	—	—	—
Robin	1	3	72	30	416	59	70	73	13
Blackcap	1	—	—	1	8	—	—	12	2
Willow Warbler	—	—	—	1	—	—	—	—	—
Goldcrest	—	—	—	—	—	—	—	—	—
Pied Flycatcher	—	—	—	1	—	—	—	—	—

(Passage beginning on 27.ix. Main passage on 29.ix).

NORTH GERMANY (Four stations).

Main passage Song Thrush and Redwing on 1.x. (beginning 29.ix.)

Main passage Robins 25.ix and 3-4.x. (some 1.x).

REVTANGEN, STAVANGER, S. NORWAY.

Main passage 1.x. (150 Robins seen). Beginning (Goldcrest only) 29.ix passage over 3.x.

With the exception of a small easterly passage at the Finnish Observatory all the diurnal migrants at the Scandinavian stations were flying in a southerly direction. Thus in the early October

rush there were at least two streams of birds moving south out of Norway and Sweden towards Denmark and Germany.

There is no bird observatory in Denmark at present but records have been received from several in north Germany. At Lake Hidden (Rugen) in north-east Germany birds have been found in the past to come from the north and north east. In September/October, 1951, there was little diurnal migration, but what there was corresponded with the Ottenby findings. Thus there was little movement of Chaffinches and Bramblings, but larger passages of Linnets, Siskins and Yellowhammers.

Although detailed notes are not available the picture in north-west Germany was a different one. Here, at Wangerooge-Ost, Mellum and Amrum, the most prominent feature was the finch migration. Chaffinches were on the move from September 26th onwards reaching a peak on October 1st and 2nd at Wangerooge and Amrum where exceptional migration was noted, "many thousands" being reported at the latter observatory.

There can be little doubt that these birds are the ones that were seen in Norway, since, in spite of a relatively large finch passage in Finland, few Fringillidæ were seen at Ottenby or Rugen. At Amrum, one of the North Frisian Islands, the birds were flying in a north-easterly direction against the wind on October 2nd. However, the whole problem of "rückzug" in Chaffinches is too complicated to discuss here.

The finches continued their passage to the south and at The Hague, Holland, where there had been no passage since September 28th, they were recorded on October 3rd flying high and accompanied by Siskins and crows. No information is available from farther south, but it seems that in the five days September 29th to October 3rd the finches migrated south from Lista in Norway to The Hague in Holland.

The North Sea crossing.

Although a large number of Chaffinches were moving on the Continent, scarcely any were reported in Britain during the same period, but as shown in Table X another Passerine species, the Robin, arrived in great numbers during the first week of October.

TABLE X: NUMBERS OF TYPICAL NOCTURNAL MIGRANT—BRITISH EAST COAST OBSERVATORIES.

	September.						October.									
	25th	26th	27th	28th	29th	30th	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
ROBIN.																
Cley	—	—	—	—	—	—	105	37	39	1	—	1	2	—	—	—
Gibraltar Point ...	—	—	—	—	—	1	300	300	150	80	50	40	30	30	20	20
Spurn Head	—	—	—	1	—	1	300	500	500	300	300	‡	‡	100	‡	‡
Monks' House	1	—	—	—	1	2	3	2	—	—	500	—	—	—	—	—
Isle of May	—	—	—	—	—	—	600	600	400	200	150	100	70	40	30	25
Fair Isle	3	1	—	—	2	—	30	50	75	75	50	25	4	10	2	—

Should such a North Sea crossing be regarded as a normal procedure in the autumn migration of small Passerines? Eagle Clarke (1912) envisaged birds flying across the North Sea from Cape Stat or Bergen in Norway to the Shetland Isles and Scotland. Such a route is possibly taken by the larger birds (thrushes, Starlings, crows, etc.) which winter regularly in the British Isles, but it must be doubted whether the majority of the smaller Passerines (*Phylloscopus* sp., Goldcrests, Robins, Redstarts, flycatchers, etc.) normally cross the North Sea at all. Such a crossing must be an uncertain and exhausting, often perilous passage for such feeble fliers and it is known to involve considerable loss in weight (*Fair Isle Bird Observatory Bulletin*, No. 6, 1952, pp. 30-31). Natural selection would be bound to oppose this journey when a much safer route, involving only short sea crossings, is available via the Skagerak and Kattegat to winter quarters in southern Europe and North Africa.

If the North Sea crossings from Bergen to Scotland had been undertaken in September/October, 1951, it might be expected that there would be a coincidence of arrival dates at the observatories in south Norway and in Scotland, but this was not so, as 48 hours or more elapsed between the first waves at Revtangens-Lista and Fair Isle-May. On the other hand the arrival dates in N. Germany and Britain agree very closely, which suggests that the night migrants left the Continent when over the Skagerak, Kattegat and Denmark. However, although numbers were seen at Ottenby on September 27th and 29th it was two days before any were recorded to the south-west, a delay for which the weather can have accounted. There was much fog over the Baltic at the end of September, and on the evenings of the 28th and 29th the sky was obscured by 8/8 cloud in S. Norway and S.W. Sweden. Then at 1,800 hours on September 30th the sky was clear, and that night there was peak migration at Lista, while the following morning the night migrants were recorded in Germany and Britain. This suggests that clear skies provide optimum conditions for nocturnal migrants and the opposite may delay their departure, and it accords with Kramer's (1952) tentative suggestion that they may orientate themselves by a bearing on the sun in the evening.

So nocturnal migrants left Scandinavia in force on the night of September 30th, following an evening of thus favourable conditions. But by midnight there was 8/8 cloud over north-western Denmark, and by 0700 hours on October 1st a pronounced fog bank off south-west Norway. At the same time there was a force three (Beaufort scale) wind blowing from the east over Denmark. These overcast conditions prevailed over the Skagerak and the North Sea as far as and including, the east coast of Britain. Thus when the migrants were crossing the sea (Skagerak and/or Heligoland Bight) the sky was obscured and it is likely that they were unable to navigate.

Their arrival at Cley with north-easterly and at Fair Isle with south-easterly winds suggests that when they were unable to navigate they were passively drifted across the North Sea by the prevailing air currents.

The weather conditions on the nights of October 2nd and 3rd were exactly similar except that the clear skies of the early evenings were replaced by fog instead of heavy cloud, and nocturnal navigation became even more difficult. The occurrence of night migrants in the early October rush to Britain may therefore be accounted for by the presence of easterly winds associated with overcast skies or fog which made navigation in the Denmark-Skagerak area impossible after the birds had started their migration.

(To be concluded in the April number).

NOTES ON THE NESTING OF A PAIR OF JAYS INSIDE A HOLLOW TREE.

BY

H. R. TUTT.

(Plates 14-15)

BETWEEN 1947 and 1951 Jays (*Garrulus glandarius*), apparently the same pair, nested in a certain part of a 70-acre orchard near Hadleigh, Essex, where the apple and pear trees were all over 50 years old and many of the former had holes in the trunks, some the disused nesting-sites of Green Woodpeckers (*Picus viridis*), others the result of decay. In each year between 1947 and 1950 these birds built a normal nest in a fork of one or another of the pear trees within a radius of 60 yards, at heights between $4\frac{1}{2}$ and 6 feet above the ground. In every case the eggs disappeared, but no second nest was found in any year until 1950, when after the loss of the first eggs a clutch of 5 was found in a nest inside a hollow in an apple tree near by. The ends of two twigs protruded slightly from the entrance hole and drew attention to it; unfortunately these eggs also disappeared almost immediately. It is known that the hole had not been used in previous years because all such places had been searched for the nests of other species.

In 1951 a normal nest containing 6 eggs was found about $4\frac{1}{2}$ feet from the ground in the fork of an apple tree within the same area. When, however, G. J. Lawrence and I came to erect a hide we found that here again the eggs had been taken. Then, on May 21st, one of the Jays was seen to visit the hole where the second nest had been found in the previous year; examination showed that the interior had been cleaned and relined with sticks. There were 4 eggs in it on May 25th and 5 two days later when the female appeared to be sitting. A hide was erected and moved to within 6 feet of the nest by the time the young hatched. There were 2 nestlings and 3 eggs on June 11th, and eventually 4 young were reared.



BLACK-BROWED ALBATROSS (*Diomedea melanophrys*) STAVELEY, DERBYSHIRE. AUGUST, 1952.
(Photographed by THE DERBYSHIRE TIMES).
(see page 110).



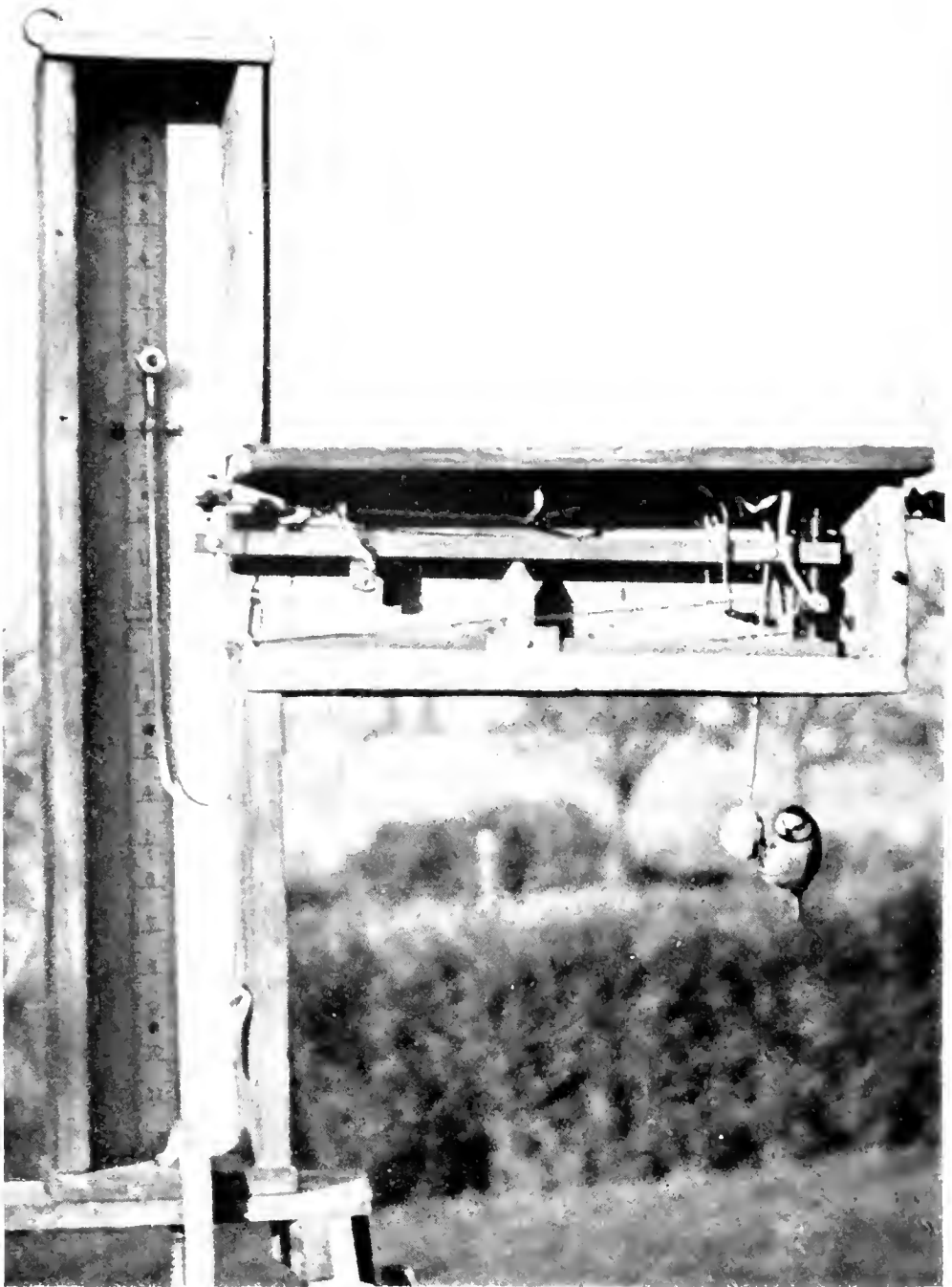
JAY (*Garrulus glandarius*). ADULT ENTERING NEST-HOLE IN APPLE TREE. ESSEN, JUNE, 1951.
(Photographed by G. J. LAWRENCE).
(see page 08).



JAY (*Garrulus glandarius*). ADULT FEEDING NESTLING IN HOLE IN APPLE TREE. ESSEX, JUNE, 1951.

(Photographed by G. J. LAWRENCE).

(see page 98).



THE BALANCE FOR WEIGHING TITS WITHOUT CAPTURE DEVISED AND DESCRIBED
BY N. C. MOORE.

(see page 103).

A Blue Tit (*Parus caeruleus*) is feeding on the bait and at the same time being weighed.

The circular entrance to this hollow used by the birds was $3\frac{1}{2}$ inches in diameter and the lower edge was 3 feet 2 inches above the ground. The bottom of the nest cup was $6\frac{1}{2}$ inches below the rim of this hole. There was a smaller hole (see plates 14 and 15) below and to the right of the entrance-hole, and through this the sticks of the nest showed; higher up on the opposite side of the tree there was another, 7 inches high and 4 inches wide, the lower edge $21\frac{1}{2}$ inches above the nest cup. This hole was often used as an exit until we covered it with hessian, in order to make the birds use the entrance alone. A fourth and last hole which was not used by the Jays, but which also led into the same cavity, was the former boring of Green Woodpeckers, about 11 inches above and very slightly to the right of the entrance. The whole cavity in this tree was 9 inches in diameter at the level of the entrance and it extended to some 6 or 8 inches above the uppermost hole—so about 38 inches from top to bottom.

When we first watched from the hide we found that the adults alighted by grasping the lower lip of the entrance-hole and then went right inside. They preferred to leave by the uppermost hole, so this was blocked with hessian, after which they came out head first by the entrance. Later, as the young grew, the Jays did not enter right into the hole, but fed the nestlings with the tail protruding (see plate 14), then withdrew backwards thereby ruffling the feathers of mantle and wings. In the final stages the young birds stuck their heads out of the hole and the adults fed them from a perch that we had put below the edge (see plate 15). The adults used to try to push their way in after feeding the young at the entrance, presumably in order to remove the faecal sacs which are normally swallowed right up to the time the young leave the nest, but they were unable to do so when the nestlings were sitting in this way in the-mouth of the hole.

We were present when the last two chicks left the nest on July 2nd, and it was particularly noticeable how weak were their attempts at flying. It seems possible that this was due to their inability to exercise their wings in the confined space, for young Jays usually indulge in much vigorous wing-flapping several days before fledging.

Every clutch of eggs that we saw in this part of the orchard between 1947 and 1951 contained one light blue egg with only a sprinkling of light brown markings, while all the other, more normal eggs were very much alike in the form of their colouring. It seems reasonable to assume therefore that the same hen was involved throughout, while this and the continued use of the same small breeding-area suggest that there may well have been only the one pair during these 5 years, in which case the change in the normal breeding-habits may have been in part a result of the repeated destruction of the eggs. In 1952 the female was killed.

[In connection with this case we draw attention to the comparable records in the note by Mr. Derek Goodwin on page 113.—EDS.]

THE INDEX OF HERON POPULATION, 1952.*

BY

W. B. ALEXANDER

(*Edward Grey Institute, Oxford*).

THE number of heronries on which reports for 1952 were received at the Edward Grey Institute was 197, or 7 more than in the previous year. Of these 151 were in England, 8 in Wales, 14 in Scotland and 24 in Ireland.

The Rev. P. G. Kennedy has again supplied figures for 16 heronries in 7 counties of Eire, G. H. Gush for 19 in Devon, R. Chislett for 6 in Yorkshire, G. W. Temperley for 5 in Northumberland and Durham and R. W. Robson for 5 in Westmorland and Cumberland. Counties or larger areas from which particulars of all known heronries have been received include Cheshire and S. Lancashire (from A. W. Boyd), Staffordshire, Worcestershire and Warwickshire (from C. A. Norris), Herefordshire (from S. M. D. Alexander), Cambridgeshire, West Norfolk and West Suffolk (from A. E. Vine), Huntingdonshire (from C. P. Tebbutt), Bedfordshire (from K. Piercy), Essex (from G. A. Pyman) and Dorset (from Dr. K. B. Rooke). The writer has collected data from all known heronries in the Thames drainage area with the assistance of members of the Oxford Ornithological Society and the Middle Thames and London Natural History Societies.

Nine heronries hitherto unrecorded have been reported. Three in Devon with 15, 3 and 2 nests by G. H. Gush, one in Somerset with 2 nests by D. G. James, one in Berkshire with 2 nests by D. Summers-Smith, one in Northamptonshire with 12 nests by M. C. Wainwright, two in Westmorland each with 7 nests by R. W. Robson and one in Perthshire with 7 nests by R. K. Martin. The earlier history of most of these is unknown, but in several cases they are almost certainly offshoots of adjacent heronries which have recently declined or which were destroyed by tree-felling during the war.

As explained in previous reports of this series it is considered that the most reliable method of obtaining an index figure for the year is to compare the number of nests in those heronries counted in 1952 with the average number in the same heronries in years when the heron population was standard. The years when the index has been regarded as standard, that is when it was between 98 and 102, were 1928, 1931, 1934, 1936, 1937, 1938, 1939 and 1951. We have figures for one or more of these standard years for 177 of the heronries counted in 1952 and these averages total 3,191 nests. In 1952 the same heronries contained 3,337 nests giving an index of nearly 105. As the index in 1951 was 100 this gives an increase in the breeding population of nearly 5 per cent.‡

* A Publication of the British Trust for Ornithology.

‡ If the standard used during the last ten years, based on the normal years from 1928 to 1939, had been adopted again without change, the index would have been 103.

Another method of estimating the change is by comparison of the numbers of nests in the 162 heronries which were counted both in 1951 and 1952. In 1951 these totalled 3,027 nests and in 1952, 3,095. This gives an increase of only 2 per cent.

The winter of 1951-52 was again a comparatively mild one. Mr. J. H. Willis has kindly informed us that the coldest months at Norwich were January, with a mean temperature of 36.4°F. and February, with a mean temperature of 36.5°F. Nevertheless, as will be seen, there has been little increase in the breeding population. Since the year 1947 when, as a result of the preceding severe winter, the population fell to 54 per cent. of the standard, the annual percentage increases have been 2 (in 1948), 35 (in 1949), 18 (in 1950), 10 (in 1951) and now 5 (in 1952). This gives us the most striking instance yet seen in the heron population of recovery to normal after a severe set-back and accords well with the explanation of the balance of population as being due to a density-dependent mortality provided by Lack (*antea*, vol. xxxix, pp. 204-6).

It will be seen from the accompanying table that, as usual, the figures for different areas show varying tendencies, and the final result for the whole country is an average in which the gains slightly exceed the losses. The samples for Wales and Borders, North-east England and Scotland are probably too small to be regarded as significant. If these are disregarded the areas which show the chief increases over the previous year are South-east England, Eastern England and the Midlands (which includes Lincolnshire). These three areas were among those which suffered severely in 1947 and have been slowest in recovery. It will be seen that in Eastern England the population has not yet recovered whilst in the Midlands the population has now returned to normal.

The sample areas in which all known heronries were counted, as shown in the Table below, agree with the general sample in showing small decreases on last year in some areas and small increases in others. In all the areas except Essex and Dorset the total is considerably above that recorded in the 1928 census. In Essex there has been a small increase in the total in spite of the disappearance of two heronries and three single nests.

Area.	No. of nests (and of heronries).		
	1952	1951	1928
Cheshire and S. Lancs.	263 (7)	269* (7)	170 (6)
Staffs, Worcs. and Warwick	254 (10)	229* (9)	174** (11)
Hunts, Beds., Cambs., W. Norfolk and W. Suffolk	353 (15)	360 (15)	206** (10)
Essex	163 (11)	157*** (13)	223 (7)
Thames Drainage Area	388** (17)	405 (16)	241*** (13)
Dorset	91 (3)	88 (3)	137 (3)
Hereford	48 (3)	42 (3)	28 (3)
Total for sample areas in England...	1,558 (66) + 2 nests	1,545 (66) + 5 nests	1,172 (53) + 7 nests

* = Single nests included in the total, but not counted as a heronry.

In conclusion we must again thank all those whose co-operation has made this report possible and ask all readers who can obtain figures of occupied nests in heronries in 1953 (preferably between April 15th and May 10th) to send the information as soon afterwards as possible to the writer at the Edward Grey Institute, Department of Zoological Field Studies, Botanic Garden, Oxford.

A BALANCE FOR WEIGHING TITS WITHOUT CAPTURE.

BY

NORMAN C. MOORE.

(Plate 16).

RECORDING of the change in weight of individual birds can provide useful data to assist in the study of bird life. The usual method of obtaining this information is by trapping ringed birds and weighing on a laboratory type of balance. Not only does this procedure disturb the bird, but there is a severe limitation on the number of weighings possible. To improve the technique the author carried out a series of experiments resulting in the development of a balance which will weigh Blue (*Parus caeruleus*) or Great Tits (*P. major*) without capture or disturbance.

The device, shown in the accompanying diagram, attracts the bird to bait fixed to a wire at (A) and suspended from the end of the balance beam. Attached to the other end of the beam is a fine mesh chain (C), so arranged that the free end can be raised or lowered by means of a string (L) to vary the weight.

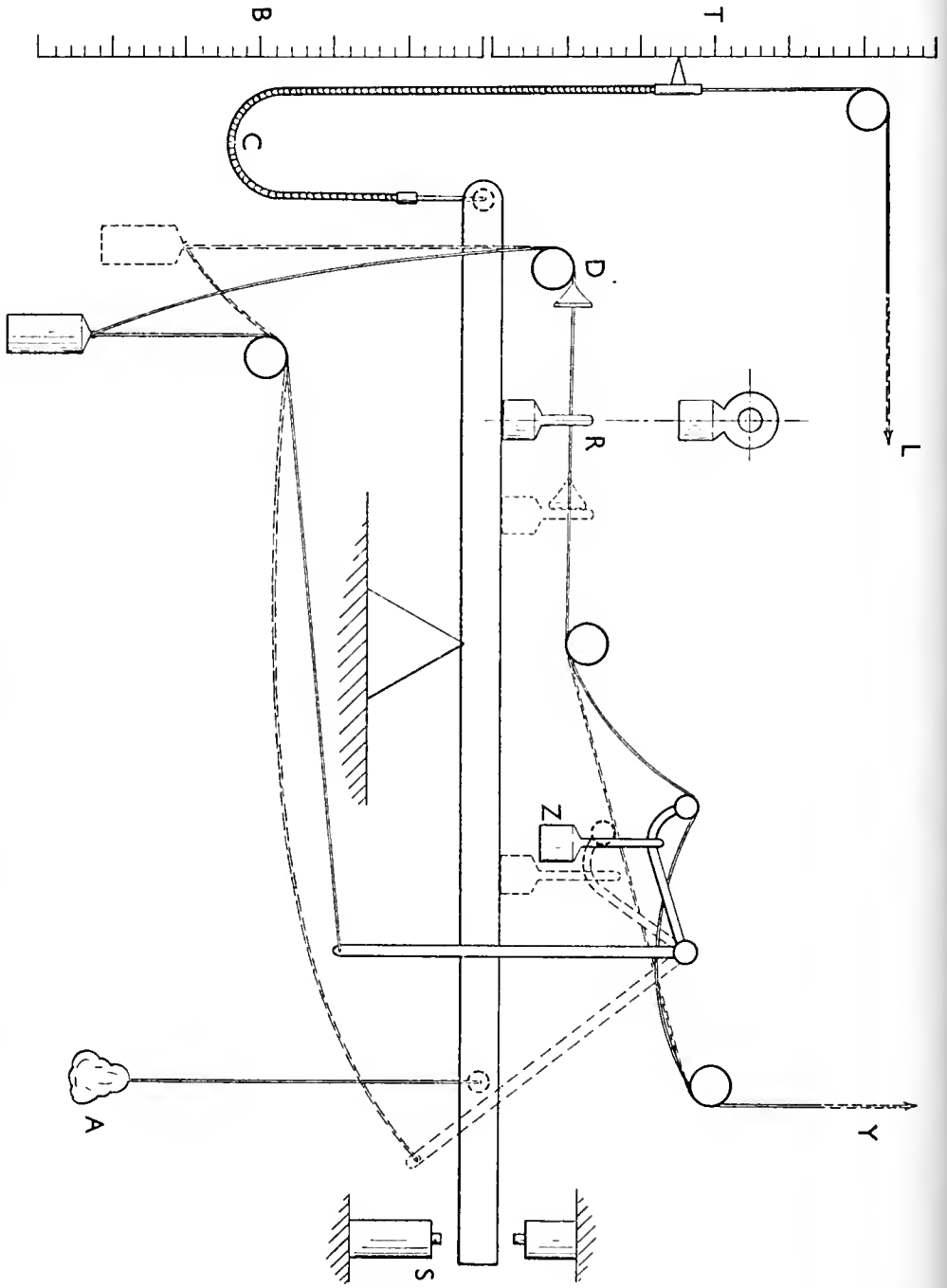
Two 12-inch rulers, each divided in tenths, are used as scales (T) and (B). Adjustments can be made so that the top scale (T) covers Blue Tit weights (9-15 grams), and the bottom scale (B) those of Great Tits (19-25 grams).

The point of balance is obtained by noting the scale reading when the beam moves away from the stop (S). The two stops have rubber facings to reduce noise and shock and allow the beam to move approximately $\frac{1}{4}$ -inch. The two scales are calibrated by placing standard weights in a pan on the bait end of the beam.

In order to counter-balance and correct for loss in weight of the bait, a rider (R) is provided and is re-adjusted after each visit of the bird. The adjustment is performed by pulling string (Y) which drops the rider (Z) on to the beam, locating it in a groove. This applies a load to the beam which is equivalent to 11 grams on the bait. The balance point should now be reached when the chain marker is raised and lowered to a top scale reading of 6.0. To re-adjust for loss in weight of bait, the string (Y) is pulled until an aluminium disc (D) touches the rider (R) and moves it along the beam. These operations are illustrated in the diagram by dotted lines.

The apparatus is enclosed in a wooden box with a glass front. The wire holding the bait passes freely through a hole in the base. For operating it is set up level outside the window of the house and the operating strings (L) and (Y) are led into the room. When the bird is on the bait the marker is moved down the scale until the balance point is reached and the scale reading recorded.

DIAGRAM TO SHOW DETAILS OF CONSTRUCTION OF THE BALANCE FOR WEIGHING TITS WITHOUT CAPTURE.



Usually the bird remains long enough on the bait for the operation to be repeated several times, thus ensuring accuracy. As soon as the bird leaves, the balance is re-adjusted in the manner described by pulling string (Y). The weight of the meal consumed can be obtained from the amount of correction necessary. Plate 16 shows a photograph of the balance in action with a Blue Tit feeding on the bait.

THE ARCTIC SKUA IN CAITHNESS.

BY

IAN D. PENNIE.

VERY little has been published recently on the status of the Arctic Skua (*Stercorarius parasiticus*) in Caithness, and in order to try to provide fuller information than that quoted by Southern (1943) I spent a week on the Caithness moors in 1952 from June 21st to 27th, accompanied by James Gunn and George Begg. We cannot claim to have made a complete census of the breeding population as some of the places where isolated pairs and small colonies have bred in past years were not visited, but it is believed that this paper accounts for all the larger colonies in the county. There are vast areas of suitable ground, but skuas are conspicuous birds on the moorland and it is extremely unlikely that there remain any large colonies which are unknown to the Caithness gamekeepers and local naturalists.

During the week we found 21 pairs in four localities, with matings in the following order of abundance: 11 dark x pale, 9 dark x dark, 11 pale x intermediate, giving a total of 26% pale birds. It is evident that there has been a very great decrease in the skua population during the past hundred years and it appears that this decrease is still going on although they are not so rigorously persecuted now as formerly.

The following notes on the various colonies are given on a parish basis.

Parish of Latheron. A colony of eight pairs was visited on June 22nd and 26th. We were told that there had been a decrease in recent years, but there is no information as to actual numbers. On our visit a fox den was found a short distance from the colony and it is possible that the foxes may take a toll of the young skuas.

The matings were: 4 dark x pale, 3 dark x dark and 1 pale x intermediate. The "intermediate" was a beautifully marked bird, easily distinguishable from all the others. The back, nape and wings were dark grey, with triangular cream-coloured patches at the angles of the wings which were thus given in flight a cream-coloured leading edge. There was a dark stripe through, and a white spot below, the eye. Under-parts were dark cream.

Three nests were found, each with two eggs. A hatched egg-shell was found in one territory and a chick belonging to the pale x intermediate pair. The typical nest-site was on a narrow strip, sometimes little more than a foot wide, between two dubhlochans.

As we approached the colony a "reception party" of nine birds flew out to meet us, but in no case did the skuas defend their territories against us, a very different state of affairs from the treatment I received on Noss and Foula, and this bears out Williamson's (1949) observations in the Faeroe Islands that aggressive display does not occur in the small scattered colonies. When we entered a territory generally one of the pair flew off while the other cruised round the territory in a desultory manner. One bird remained flying close round a nest containing two eggs and settled once or twice wing-flapping near it. The only other "injury-feigning" seen here was by the pair in whose territory an egg-shell was found, both birds doing a wing-flapping display, and to a lesser extent by the intermediate bird. The latter was also seen to make a vicious and persistent attack on a Red Grouse (*Lagopus scoticus*) which had settled in its territory, and on one occasion five Ravens (*Corvus corax*) crossed the colony, the last one of which was hotly pursued and "dive-bombed" by the skuas.

Kennedy (1933) records also a few scattered pairs in the south-west of the Parish of Latheron.

Parish of Watten. This parish contains what is still the largest colony in the county, situated in a trackless and seemingly endless and bottomless morass thickly studded with dubhlochans. There were probably 11 pairs in 1952, 6 dark x pale and 5 dark x dark, but the colony is spread over a vast area devoid of landmarks, and it is consequently almost impossible on a short visit to mark down each pair with absolute accuracy.

This is the colony referred to by Reid (1886) and by Harvie-Brown and Buckley (1887) both of whom quote from Osborne's manuscript of 1868 (*vide* Harvie-Brown and Buckley, p. 6) ". It is feared that this interesting colony is now thoroughly broken up, having a few years ago come into the possession of an English nobleman in the first year no fewer than eighty skuas were destroyed." Booth (1881-87) mentions no locality, but it is probable that he refers to this well known colony. He does not give the population although he lists the matings. The present proprietor does not interfere in any way with the skuas, but he informed us that he thought there had been a slight decrease in recent years.

This colony was visited on June 23rd and 25th. On June 23rd there was heavy rain, cloud and mist all day and the skuas were very ready to settle, making the nests comparatively easy to find, but the 25th was clear, warm and sunny and the birds were much

wilder and unwilling to return to their nests. Four nests were found in the usual sites between two dubhlochans; one was actually on a tiny island in the middle of a dubhlochan.

Again a "reception party" flew out to meet us but there was no attempt at mobbing. Injury-feigning however was more in evidence here. One of a pair (with eggs) which were both flapping and crawling near the nest vomited while displaying. Only once did we hear the high-pitched, whistling call made by a displaying bird; this was by one of a pair which paid more attention to us than any other. Although we did not succeed in finding either egg or young, both birds crawled round wing-flapping and whistling, and one even made a half-hearted swoop towards one of us. A repeated trisyllabic "kow-ow-ow" call was uttered by one of a pair which had a newly hatched chick. Another pair was seen stooping repeatedly at a Blue Hare.

On several of the grassy hummocks in this colony were found broken egg-shells of ducks and of Golden Plover (*Pluvialis apricaria*) presumably taken by the skuas.

This colony is about four miles from the one recorded by Winnall and Ycates (1932)—"About nine pairs in 1930 and only four pairs in 1931." Unfortunately it was not until I returned from Caithness that I discovered that this referred to a separate colony which otherwise we could easily have visited.

Parish of Halkirk. In an extremely isolated spot where there has been for many years a small colony of skuas we found on June 24th a single dark x pale pair. The keeper on the ground told us that in previous years there had been a maximum of four or five pairs, but he had never seen so few as this year. The nest, with two eggs, was found in the usual site between two dubhlochans. Both birds remained at the nest "injury-feigning," initiated by the pale bird and continued in extreme form by the other crawling along the ground trailing the wings. No attack was made.

A single dark x dark pair was found on June 27th in a locality from which there is no previous record. This new pair was very wild and unwilling to settle and while flying around was suddenly joined by a third dark bird, accompanied by which one of the pair flew off out of sight. Thereafter the remaining bird exhibited a well-developed display of wing-flapping, crawling and whistling, during which the mate returned, but did not join in the display.

Subsequently we were informed that one or two pairs have bred regularly in recent years about four miles from this last pair.

Parish of Reay. Skuas were very plentiful about fifty years ago, but the largest colony, which numbered thirty or forty pairs, was completely destroyed by gamekeepers many years ago. One pair, dark x dark is known to have attempted to nest this year almost exactly on the Sutherland march, and it is possible that there may

still be an odd pair or two in Reay, but it is extremely doubtful if the Arctic Skua now breeds regularly in the County of Sutherland.

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FLOCKING BEHAVIOUR OF OYSTERCATCHERS.

BY

KENNETH WILLIAMSON.

(Fair Isle Bird Observatory).

SOME observations made in company with Ian Munro during a two-hours' watch from a permanent hide, built by him near the tip of a sand-and-shingle spit in the Eden estuary, Fife, may have some interest for students of bird behaviour. We entered the hide two hours before high water on the afternoon of December 31st, 1951, and as the tide rose flock after flock of birds arrived and settled to rest between the hide and the end of the spit some 100 yards away. Oystercatchers (*Hæmatopus ostralegus*) were in the majority and eventually about 1,500 had settled in the middle section of the spit. Around them, on the tide-line, large numbers of Knot (*Calidris canutus*) and Dunlin (*Calidris alpina*) gathered, and there were some 500-600 Bar-tailed Godwits (*Limosa lapponica*) and the same number of Curlew (*Numenius arquata*) scattered about, especially on the fringe of the Oystercatchers. Redshanks (*Tringa totanus*) were well represented, mostly busy feeding at the pools or the tide's edge, although all other species seemed content to rest. A small number of Grey Plovers (*Squatarola squatarola*) were in the assemblage, and once a flock of 16 Black-tailed Godwits (*L. limosa*) flew over, but did not settle.

The great majority of the Oystercatchers, and many birds of the other species, were resting in what Makkink (1942) has called the

"pseudo-sleeping attitude." That is to say, they were standing quietly on one or both legs, their heads turned and bills pushed into the scapular feathers in the normal posture of resting birds, but with the eyes wide open. The interest of this pattern is that it occurs in more than one behaviour-context. As was shown by Makkink, two birds whose attitude is mutually hostile will adopt the "pseudo-sleeping" posture when reluctant or afraid to attack each other; and Edwards, Hosking and Smith (1948) photographed the activity after a bird had made attempts to "evict" its own reflection in a mirror placed near the nest. I have observed the activity commonly among Oystercatchers in charge of chicks and even newly-fledged young, when they were disturbed by my approach (Williamson, 1950 and 1952). In all these cases, "pseudo-sleeping" is introduced as a low intensity reaction when the impulse to attack or remonstrate against intrusion is balanced by the desire to withdraw from conflict. It would thus appear to be a displacement activity, and I have suggested (*op cit.*) that its primary function is probably to be found in flocking behaviour.

Why the Oystercatchers should practise this sham sleeping, rather than rest on one leg and with closed eyes in the normal way, was not at first clear, but the subsequent behaviour of the birds as the tide rose makes it appear likely that the activity is related to each bird's need to maintain a clear space in its immediate neighbourhood. This "individual distance" has been discussed by Conder (1949) in relation to a number of species, and I need only comment here that in flocking birds a small clear space surrounding each member is a vital necessity for a quick and unimpeded take-off should danger suddenly threaten the flock. As the tide gradually flooded the end of the triangular spit the Curlews, Godwits, Grey Plovers, Oystercatchers and others in that area were crowded into an ever-decreasing space, and the minute territory which each individual wanted for itself was sorely compressed. Every few minutes those Oystercatchers nearest the point of the triangle faced about and, piping vigorously and in unison, began to move away from the encroaching water. The effect was electric: far from protesting, the birds ahead of them "woke up" from their sham sleeping and joined the pipers, so that within a few seconds the movement had gathered great momentum and an army of birds extending the full width of the little peninsula was advancing towards the hide. The excitement among the Oystercatchers was intense, and they alone were vocal: the Godwits, Curlews and others were obviously less deeply affected, but they invariably turned and joined in the movement nevertheless. Finally, each succeeding time some five yards nearer to the hide, the excitement subsided, the birds went back to their "pseudo-sleeping," and an uneasy quiet prevailed until the advancing tide forced the outermost Oystercatchers to press the flock still farther back so that their own "individual distance" might be assured.

The advancing front of Oystercatchers, perhaps eighty yards wide and many feet deep, was a spectacular sight, and we had the impression of watching—and hearing—a highly organised social activity. In such a flock normal rest would have been out of the question for any bird, and it seemed to me that its substitute, "pseudo-sleeping," has in fact arisen as a secondary modification of the normal resting posture, and owes its peculiar nature to that vital need of every member to ensure that his minute portion of territory within the flock does not diminish. It appears as a low intensity reaction with fundamentally the same nature as in the other situations mentioned above. It is a curious anomaly that such vigilance should masquerade beneath a cloak of rest!

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NOTES.

Red-throated Diver taking off from the ground.—With reference to the note on this subject (*antea*, vol. xlv, p. 331), I write to record that on February 25th, 1951, at Hornsea Mere, Yorkshire, I saw a Red-throated Diver (*Colymbus stellatus*) apparently sleeping on the bank. On my approach it took a few clumsy steps forward and then flew up from the ground, although within ten feet of the water's edge. D. B. PEAKALL.

Black-browed Albatross in Derbyshire.—On August 21st, 1952, Mr. Morton H. Edmunds, the Editor of *The Derbyshire Times*, sent to the British Museum for identification a photograph of a bird (see plate 13) that had been captured a few days previously (the exact date was unfortunately not recorded) at Stavely, Derbyshire, where it had become entangled with telegraph wires, although without sustaining any serious injury. The bird seemed to be in an exhausted condition and Inspector G. A. Lloyd, of the R.S.P.C.A., took the sympathetic course of sending it by rail to Skegness, Lincolnshire, where it was released. It is much to be regretted that the bird was not examined by a competent ornithologist, but the excellent photograph (reproduced here by kind permission of *The Derbyshire Times*) seems to show fairly clearly the main characteristics of an immature Black-browed Albatross (*Diomedea melanophrys*). Mr. Edmunds said that "The bird had a wing span of 5 feet and a body 30 inches long. A 4-inch dark-coloured

beak ended in a downward curve. Snow-white in its head and breast-feathers, the bird was softly shaded from a greyish-fawn to black on its back and wings. It stood erect on broad, webbed feet of a delicate flesh-colour." From the photograph it appears to me that the wing-span was somewhat underestimated and that 6-7 feet would be more accurate. *The Handbook* gives the maximum wing-span as 8 feet, but presumably this is only attained by fully adult birds.

J. D. MACDONALD.

[This bird, although apparently an example of *D. melanophrys*, seems to have been in a very unusual state of plumage. In the first place, the juveniles of this species (and all the other small albatrosses) have largely grey heads. The "snow-white" head here should indicate maturity, but usually the adult Black-browed Albatross, as its name implies, has a conspicuous black stripe over the eye which is lacking in this case. The same kind of problem is presented by the colouring of the soft parts, because the bill of an adult is normally yellow, and that of a juvenile horn-grey or brown which is presumably the equivalent of the colour implied in the description. On the other hand the flesh-coloured feet suggest an adult. The comparatively narrow, white band under the wings with a broad, dark margin is another juvenile character. Thus this bird has juvenile characters of bill and wings, adult head-plumage (except for an almost complete absence of the superciliary, dark mark) and feet the colour of which suggests an adult. There appears to be no published description of such an individual, but the rather stout bill is almost diagnostic of the Black-browed Albatross and, taking all the features into consideration, we agree that this is acceptable as the second or third British record of this species.—EDS.]

American Bittern "freezing" in the open.—With reference to the two recent records of the Bittern (*Botaurus stellatus*) freezing on open ground (*antea*, vol. xlv, pp. 33, 419), it may be remarked that the American Bittern (*Botaurus lentiginosus*) not uncommonly "freezes" in the open; it is, as *The Handbook* remarks, a bird which occurs rather more commonly in open habitats.

On one occasion in May, 1940, when a bird which I had flushed out of a reed bed in Ontario landed on an adjacent meadow, it appeared to undergo a truly startling metamorphosis into an old tree stump; it remained perfectly still for several minutes before starting to feed in the open. Another bird nesting in an open reed bed froze on its nest until I touched it with my foot. Possibly any absence of records of the European Bittern "freezing" in the open can be correlated with a scarcity of Bitterns, combined with their preference for thick cover, where such behaviour is very characteristic of the species.

W. R. P. BOURNE.

[There is another record, similar to those already published (*loc. cit.*), in the *Report on Somerset Birds* for 1951, p. 14: at Blagdon Reservoir on January 7th, 1951, a Bittern "froze" on an open track at the approach of a car (Bernard King, E. C. Buxton). Eds.].

Long stay of Iceland Gull in Lanarkshire.—An immature Iceland Gull (*Larus glaucooides*) visited the municipal rubbish-dump at Hamilton, Lanarkshire, during the winter months of 1950, 1951 and 1952, and, probably, during the intervening summers.

It was first seen, by N.H., on December 20th, 1949, and thereafter at intervals until May 12th, 1950. As observations were discontinued for the next few months, it was not seen again until October 26th, 1950, but, on the testimony of the rubbish-dumpers who knew the bird well, it was present during the summer. There is no doubt that these observations refer to the same bird, since it was recognisable by a damaged, dangling right leg. It was seen throughout the winter of 1950-1951, until April 17th. We cannot establish whether the bird was present during the ensuing summer, but it was back again on October 3rd, 1951. It remained for the winter, was seen in May, June, September and November of 1952, and finally—so far as the rubbish-dumpers know—disappeared about the middle of December, thus completing a more or less continuous stay of about three years.

When first seen it was a first winter bird of the pale type described by G. T. Kay (*antea*, vol. xliii, p. 399), its general colour being white with a faint buffish tinge; the primaries were purer white and the head more buff. In the second winter the plumage appeared pure white, with the result that it could be picked out from among flying Herring Gulls (*L. argentatus*) at a distance of over a quarter of a mile. At the beginning of the third winter the bird was much more shy and good views were difficult to obtain; in October and December, 1951, however, the bill was seen to be much yellower, with a dark patch at the gonys. On January 22nd, 1952, the bird was seen in snow which revealed, by contrast, the continued presence of pale brown speckling on the shoulders. By April 8th the bill had become yellow with a red band, as in adults, but there was still no grey on the back. The dark eye was conspicuous against the white cheeks.

It was usually silent, but, on May 9th, 1950, it lifted its head and called in the manner of a Herring Gull, but with a thinner and shriller note. It uttered a similar call with head lowered while approaching an immature Herring Gull. A low croak was also heard as the bird took to flight.

It soon learned that rubbish is not dumped on Saturday afternoons and Sundays, when it was almost invariably absent. Several

times it was seen mounting to a great height and flying off down or, more usually up, the Clyde valley.

On January 19th, 1951, an immature Glaucous Gull (*L. hyperboreus*) was also present at the dump and the two birds were seen together. There appear to be no previous records from Lanarkshire of either of these two species (see *Scot. Nat.*, vol. 64, p. 30).

The long stay of this bird near an easy source of food may have been due to its injured condition. The record should be compared with that of an Iceland Gull at Bristol (*antea*, vol. xxviii, pp. 199-202).

NICOL HOPKINS AND M. F. M. MEIKLEJOHN.

Large gatherings of Turtle Doves.—With reference to the note on this subject (*antea*, vol. xlv, p. 424), Mr. Michael J. Seago reports that on September 3rd, 1943, he counted 154 Turtle Doves (*Streptopelia turtur*) at Great Plumstead, Norfolk. They flew up from a stubble field and all landed on overhead wires. There were 108 at the same place on September 7th, but only 30 on September 14th. Similar records are given in *The Bedfordshire Naturalist* for 1951, p. 33 (about 100), and in *The Sussex Bird Report* for 1951, p. 16 (about 200).

Jays nesting in hollows in trees.—In April, 1951, two pairs of Jays (*Garrulus glandarius*) nested in hollows in trees in Kensington Gardens, London, where there was no apparent lack of more typical sites. One nest was in a horse-chestnut about 25 feet high; there was a large elliptical opening terminating in a hollow about 7 inches in diameter in which the nest was built, the top of the nest being about 10 inches below the lowest point of the opening. The second nest was about 40 feet up in a hollow where three boughs radiated out from the trunk, this hollow being similar in size to the other, but less deep. Both nests were typically constructed, and both were robbed of their eggs, possibly by other Jays or Carrion Crows (*Corvus corone*).

Although these sites were such as might well have been chosen by Stock Doves (*Columba oenas*), for example, it should be emphasized that in both cases there was open space above the sitting bird, which was able to hop down onto its nest instead of creeping through a hole into it. The stimulus from such a situation might well suggest to the bird a very firmly supported, well screened site among branches rather than a hole.

I understand that other ornithologists in London have seen Jays entering hollows in trees, but as they "knew Jays did not nest in holes" they did not make any investigations or watch what the birds were doing.

DEREK GOODWIN.

Wheatear hovering during sexual display.—Mr. L. W. Hayward writes to record that on June 15th, 1952, on Cleeve Hill, Gloucestershire, he was watching a male Wheatear (*Enanthe*

ænanthe) performing its display flight, when suddenly it paused and hovered about ten feet from the ground, remaining almost stationary with wings shivering. It then dropped to the earth and continued the normal display, again chasing the female. This hovering was repeated three times before the female eventually flew off, leaving the male alone. Hovering has been recorded before in this species (*antea*, vol. xxxvi, pp. 73, 94) and is in any case a frequent occurrence in many places during feeding or normal flight, but it does not appear to have been recorded as a part of the sexual flight.

Wood Warblers in Sutherland.—With reference to the note on this subject (*antea*, vol. xlv, p. 328) Dr. Ian D. Pennie has pointed out that he has already recorded (*vide*, *Scot. Nat.* vol. 62, pp. 55-56) the occurrence of Wood Warblers (*Phylloscopus sibilatrix*) in the Tongue beech woods since 1947 (as well as one on the south shore of Loch Naver in 1949) and that one was seen and heard on June 27th, 1949, at Reay in Caithness, apparently the first record for that county. Both of these localities are, of course, further north than those recorded in the previous note, and we apologise for overlooking these records.

In addition, Mr. R. S. R. Fitter reports that in June, 1951, he heard this species singing in two birch woods on the north coast of Sutherland, in what are very nearly the most northerly woodlands on the British mainland. He adds that, in 1951, two were singing in the birch woods at the head of Loch Eriboll on June 8th and 14th, and that he heard the bird in the woodland (mostly birch) around Hope Lodge, at the north end of Loch Hope, on June 10th.

REVIEWS.

Check-List of the Birds of Great Britain and Ireland. Prepared by the List Sub-Committee of the British Ornithologists' Union. (B.O.U., 1952). Obtainable from H. F. & G. Witherby, Ltd., 7s. 6d.

This list is the result of work begun about 6 years ago. It is based on the B.O.U. List of 1923, and incorporates additions, alterations and corrections which have been published since then in *The Ibis*. There are however two notable changes from the last B.O.U. List, namely the arrangement of orders and families in the "Wetmore" classification beginning with the divers and ending with the Passerines, and the listing and numbering of birds as species instead of as subspecies. Both these changes are to be welcomed and are in accordance with present tendencies. However, it is surprising that nowhere in this publication is it explained that a major rearrangement of classification has been made, no mention is made of Dr. Wetmore, nor indication given of the basis of arrangement of species or larger groups.

Wetmore's classification, as mentioned in our January *Editorial*, does not define the sequence of genera and species within each family of birds, and so some variations of species arrangement between one list of British Birds and

another built on the Wetmore framework is to be expected, until an authoritative list becomes generally accepted in this country. It is therefore very disappointing to find that the present list seems unlikely to satisfy this need in a lasting way.

In an unfortunate attempt to force the classification of the natural relationships of birds to comply with an idea of nomenclature, the Sub-Committee have listed first in each genus the "type species" of that genus, the type species being so positioned without consideration of its relationship to other species in the same genus.

In consequence, the skuas, for example, instead of being arranged with Great Skua at the beginning or end of the genus, are listed Arctic, Great, Pomarine, Long-tailed; similarly the Meadow Pipit is listed first among the pipits and separated from the closely related Red-throated and Tree Pipits by Richard's and Tawny Pipits. There are other examples of sequence of species within a genus which appear equally to offend the basic idea of a natural classification.

The sequence of genera listed for the Anatidæ gives the following order: surface ducks, diving ducks, sawbills, sheld ducks, geese, swans. We cannot understand the reason for this, which results, for example, in the Sheld Duck being far removed from other surface-feeding ducks. Also unexplained is the transfer of the Wallcreeper from the family Certhiidæ to the family Sittidæ.

The treatment by species gives a total of 426, up to the closing date of July 31st, 1950. Sight records have not been admitted. Each species is listed binomially together with an English name, a few words giving world range in broadest outline, and status in the British Isles. These distribution comments are very concise, but it is unfortunate that more care was not taken to avoid the various errors that occur: for instance, the Fieldfare is stated to visit Greenland "casually," but it is there in fact now a breeding resident. Where subspecies are recognised the British status follows the trinomial scientific name (without subspecific English name) of the race(s) occurring there. The Sub-Committee do not appear to have taken the opportunity of re-examining the claims of some passerine vagrants from N. America to be accepted on the British list. This could well be done, if adequate meteorological data are available, in the light of K. Williamson's recent work on drift migration, and with the knowledge that Wheatears and Lapland Buntings from Greenland are regular migrants to Britain, and that certain American swaders are now of annual occurrence here.

Alterations to scientific names follow, in the main, changes which have been published from time to time in *The Ibis*. Shortly before the publication, however, of this *Check-List*, there appeared Triple-Parts 1/3 of Volume 9 of *The Bulletin of Zoological Nomenclature*, which challenges some of the changes freshly incorporated in the *Check-List*. Since the B.O.U. in 1951 resolved that decisions of the International Commission on Zoological Nomenclature should be published in *The Ibis* and followed in all publications of the Union, it is extraordinary that mutually acceptable names were not agreed upon; it is also very inconvenient and confusing to the rank and file of ornithologists. The compilers adhere to original orthography, but we feel that it creates unnecessary difficulty to require for example, that the word "*haliaëtus*" be spelt "*Haliaeetus*" when it refers to the White-tailed Eagle, and "*haliaetus*" when it refers to the Osprey. We note the mis-spelling in the *Check-List* of *Glareola nordmanni*.

In deciding what subspecies to accept, it would be impossible to satisfy everyone. We are glad to see a long list of races which the Sub-Committee have rejected; we wonder, however, what consideration they gave to the claim (*antea*, vol. xxxiii, pp. 188-189) that *Phylloscopus trochilus acredula* is the form of Willow Warbler breeding in most parts of Scotland.

We do not agree with a number of the English names which have been used—for example, titmouse for every species of tit, Redbreast for Robin,

Golden Mountain Thrush for White's Thrush. As exceptions to the authors' practice of giving English names for full species only, Rock Pipit, Water Pipit and American Pipit are listed under *Anthus spinoletta*, and Pied and White Wagtails under *Motacilla alba*. On the other hand the name Yellow Wagtail only is given for the whole *Motacilla flava* group, a step which deserves wide support, but from which two of the authors of this list have themselves already deviated in a regrettable way.*

In line with endeavours being made on both sides of the Atlantic to reduce the number of birds which are known by different English names in the two continents, American birds which are vagrants here are given their American, in preference to their British names. For birds common to America and Europe the plan of the entries is to give the English name, followed by the American name where different, along-side the species scientific (binomial) name. Yet we note the omission of many American names which qualify for inclusion here even though the American bird may be a different subspecies, including Red-backed Sandpiper (Dunlin), Marsh Hawk (Hen Harrier), Pigeon Hawk (Merlin), Hungarian Partridge (Partridge), Florida Gallinule (Moorhen), Semipalmated Plover (Ringed Plover), Wilson's Snipe (Snipe), Hudsonian Curlew (Whimbrel), Cabot's Tern (Sandwich Tern), Richardson's Owl (Tengmalm's Owl), Chickadee (Willow Tit), Lapland Longspur (Lapland Bunting), Horned Lark (Shore Lark).

The preparation of this *Check-List* provided a fine opportunity for establishing the Wetmore order on a firm foundation in this country, and it is impossible to avoid a feeling of real regret that it is so easy to find fault with almost every aspect of it.

E.M.N., P.A.D.H., I.J.F.-L.

*Vide GRANT, C.H.B., AND MACKWORTH-PRAED, C.W. (1952). "On the Species and Races of the Yellow Wagtails from Western Europe to Western North America." *Bull. Brit. Mus. (Nat. Hist.) Zool.* I (9): 255-268.

Roufuglene og Viltpleien (Predatory Birds and Game-Preservation). By Yngvar Hagen. Gyldendal Norsk Forlag, Oslo. Norwegian text. Pp. 603, 114 figures. Price 50 Norwegian Crowns.

This excellent book is intended to meet the need, felt by Norwegian naturalists and sportsmen, of an up-to-date, reliable account of the predatory birds of their country. The bulk of its text is devoted to essays on the 25 Norwegian indigenous birds-of-prey and owls, largely based on the author's personal knowledge of them acquired during 17 years' field-work. Each essay is conveniently divided into sections on plumage, field-characters, distribution in Norway, life-history, breeding-habits, and food, all treated at considerable length; the whole often extending to more than 20 pages. Where records permit, Mr. Hagen attempts to trace, and account for, changes in status, both locally and throughout the country as a whole. Indiscriminate persecution has taken a heavy toll of all predators, mammals and birds alike; but it is such harmless species as the Buzzard and Osprey which have suffered the most, while the more destructive Goshawk has contrived to hold its own. The situation seems to be improving, however, and two species, the Long-eared Owl and Hen Harrier, have become more numerous and more widely distributed in the course of the last twenty years. Particularly interesting are the notes on the variations in the breeding-populations of such boreal species as the Snowy and Hawk Owls and the Rough-legged Buzzard, as his material enables the author to correlate them with fluctuations in the numbers of the small rodents and game-birds. Many of the comprehensive paragraphs on the breeding-cycle embody valuable notes on the rearing and growth of the young, the most important of which perhaps are those on the early life of the Snowy Owl. Where there is a marked disparity in size between the sexes, Mr. Hagen has been able to prove that the males develop more rapidly, and fly sooner, than the heavier females. In the sections on food, collated Norwegian data are tabulated in a form which allows the reader to ascertain, at a glance, which creatures form the bulk of the prey

of the species concerned. With some species, Mr. Hagen gives, under the same heading, very instructive tables showing the number of pairs breeding in a given area from year to year, and their success or otherwise in rearing broods, correlated with the supply of suitable prey—a subject partly discussed in the preceding paragraphs. These show, as might be expected, that while the largest clutches are laid, and the highest proportion of young fledged, in 'mouse-years', many predators make no attempt at nesting in unfavourable seasons. At times, prey remains plentiful enough until well into the breeding-season, and then suddenly becomes scarce. Under such conditions, the mouse-eating predators set about nesting in fair numbers; but small clutches are the rule, and very few young survive, the majority dying of starvation. It is then also that such birds take their heaviest toll of birds, including game. Mr. Hagen suggests that this keener competition in the search for food accounts for the small clutches laid, and the few young reared, by birds, like the Merlin, which—even in 'mouse-years'—take very little furred prey. Cannibalism amongst young birds-of-prey has come under the author's notice at one nest of the Kestrel, two of the Goshawk, and three each of the Merlin, Rough-legged Buzzard, and Hen Harrier. An interesting account is given of the hoards of prey collected by the Pigmy Owl—often the sole indication of the presence of that retiring and little-known bird.

The essays are preceded and followed by more general chapters dealing with such matters as past and present policies of game-conservation in Norway, fluctuations in the stock of game, and the relation between the very similar variations in the numbers of the smaller rodents and the predators. Of considerable importance, in the reviewer's opinion, is the analysis of 11,221 prey-records. These include 724 game-birds—surely not a very considerable proportion. Apart from victims of cannibalism, as many as 54 predators figure in the list, amongst them such powerful creatures as a Snowy Owl and two Rough-legged Buzzards found in Eagle Owls' nests, and a Gyr Falcon found in a Golden Eagle's eyrie. Short-eared Owls seem particularly liable to capture, five being noted at Eagle Owls' nests, three at those of Rough-legged Buzzards, and four at Peregrines' eyries. Amongst the 6,917 small rodents recorded it is surprising to find only 517 lemmings, and a very large proportion of those picked up by Mr. Hagen about hawks' and owls' nests were untouched. Careful examination of large numbers of pellets led him to the conclusion that lemmings are never so completely digested by birds as are voles, which suggests an explanation of the relative infrequency with which the former have been recorded as prey. In his final chapter, Mr. Hagen discusses the problems of game-conservation. The reader is reminded of the many factors which must be taken into consideration, and is warned in conclusion that while control of birds-of-prey may become necessary under special circumstances, their wholesale destruction can never be justified.

The many illustrations include some excellent photographs. That of a Snowy Owl feeding her small young calls for particular comment.

If any criticism is required, it is that the author might have made more use of records from non-Scandinavian sources in collecting material for so important a work. Otherwise, he is to be warmly congratulated on an outstanding contribution to biological literature.

H. M. S. BLAIR.

COUNTY BIRD REPORTS.

The Birds of Leicestershire and Rutland, 1951.

The first seven pages of this report are occupied by an account of the various concerted inquiries by the Society the utility of which it is not possible to evaluate from a single year's work. This must be left to those to whom the duty of working out the results of a series of years may fall. The remainder is on the usual lines of notes on each species, amongst which there are no very outstanding novelties. A pair of Cirl Buntings nested for the second year and the nesting of Grey Wagtail and Curlew, previously suspected, was confirmed, though the evidence as given in the latter case does not appear to

be quite conclusive. The nesting of a pair of Herons in reeds is an interesting instance of reversion to a former habit and it is good news to hear of the considerable increase of breeding Great Crested Grebes. Of casual visitors, a Dipper on July 15th, single Buzzards on several occasions, an Osprey in September, four Grey—and one Red-necked—Phalaropes, two Ferruginous Ducks in March and April and a total of 42 Black Terns on August 31st are worthy of mention. The autumn is stated to have been a poor one for waders and only produced four Little Ringed Plovers, a Little Stint, a Sanderling and a Knot, in addition to the phalaropes. N.F.T.

The Essex Bird Watching and Preservation Society, Report for 1951.

The raising of the water level at Abberton Reservoir with the total submergence of the island has, as was to be expected, proved disastrous, particularly as regards the species that nested there in 1950. It is to be hoped that the present water level is not to be a permanent one. Naturally the bird records from that area are not a tithe in number or in interest of what they were last year. With regard to breeding birds it is good to note that Corn Buntings and Woodlarks are increasing and spreading and that the Great Spotted Woodpecker and Pochard are also increasing, while the Kingfisher is now picking up its numbers well. We are glad to note that more attention has been paid to coastal breeders, some twenty pairs of Oystercatchers, ten colonies of Common and nine of Little Terns having been located, and since all of these are small ones, it appears to us that there are probably a good many more of both awaiting discovery. Three more colonies (making eleven) of Black-headed Gulls are also recorded, all of considerable size. A feature of the report is the result of the enquiry, for the second year, on the distribution of fourteen selected species, which has resulted in a good deal of new information as to their distribution and status. It is satisfactory to note that this enquiry is continuing, both in respect of these and a further twelve. Of casual visitors, the following are worthy of mention: a Golden Oriole on June 30th; Waxwings in March, April and December; a flock of 125 Black-tailed Godwits; Glaucous and Iceland Gulls. N.F.T.

The Report of the Oxford Ornithological Society on the Birds of Oxfordshire, Berkshire and Buckinghamshire for 1951.

An attempt has begun in this report to trace the routes through the three counties taken by the arriving summer residents, by collecting the dates recorded into eight geographical regions. Very little is of course to be deduced from the figures for one year and it appears that such an enquiry will have to be continued by a large number of observers over a considerable time before any safe conclusions can be reached. Of breeding records the most noteworthy include Wryneck, one pair in Oxfordshire and two in Buckinghamshire; three broods of Wigeon in Berkshire; four pairs of Tufted Duck in Berkshire and two in Buckinghamshire; two broods of Little Ringed Plover in one locality in Berkshire, while a pair was present in a second from April 12th to July 22nd. An open nest of Tree Sparrows is recorded from Hordley, Oxfordshire. Dippers were present in three localities, but nesting was not proved. Among casual visitors are a Hoopoe in Berkshire in July; numerous records of Buzzard in all three counties; a Kite in Berkshire on October 25th; an Osprey for four weeks in July and August; six Bewick's Swans on Oxford floods on Feb. 21st; a Grey Phalarope on Oct. 6th; three Temminck's Stints on May 16th; numerous Wood Sandpipers, a Spotted Redshank and a Little Gull all in Berkshire in autumn.

In connexion with this Report attention should be drawn to Mr. W. B. Alexander's recently published *Annotated List of the Birds of Berkshire*, an admirable piece of work that should be in the hands of all county observers, as a basis and guide for their future work. It is to be hoped that Mr. Alexander's example will be followed in all those counties that lack a reasonably up-to-date book on their birds. N.F.T.

LETTERS.

THE USE OF DATA ON NEST RECORD CARDS.

To the Editors of BRITISH BIRDS.

SIRS.—We were interested to read Mr. Nelder's letter in your November, 1952, number (*antea*, vol. xlv, p. 430) and feel we should like to dispel any idea that possible bias in the collection of records is not already fully appreciated by those responsible for running the B.T.O.'s Nest Records scheme. One of us as organiser of this scheme and the other as one of the largest individual contributors to it, we have frequently discussed just those points raised by Mr. Nelder.

First, regarding Mr. Nelder's criticism of the use of standard errors in published analyses of nest records. Errors in average figures, for instance of clutch-size as given by D. Summers-Smith (*antea*, vol. xlv, pp. 153-167), may arise at either of two stages; viz. (i) in the original finding of nests by contributors to the collection (to which Mr. Nelder particularly refers), or (ii) because the data on the records are inconsistent or too few. A standard error attached to an average figure refers only to the second of these two contingencies, since it is a measure of the reliability of that average *vis-à-vis* the sample; it cannot, and does not purport to take into account bias in the collection of the sample.

Secondly, it is surely obvious that a nest which is easily found by an investigating ornithologist is also easily found by human, and perhaps even by non-human, predators; but assessment of this tendency does not immediately lend itself to simple experiment. As regards a bias towards artificial habitats, nests never have been and never will be found "properly distributed among the various habitats"; and no one in their senses—least of all D. Summers-Smith—is likely to assume otherwise.

Despite inevitable bias, the B.T.O. nest records provide an unique and valuable source of information on breeding biology, when the limits inherent in the method of their collection are properly appreciated. Any investigation, undertaken by Mr. Nelder or others, into sources of bias in nest-finding would be universally welcomed, but it will call for rare ingenuity in planning and execution.

JOHN GIBB, BRUCE CAMPBELL.

To the Editors of BRITISH BIRDS.

SIRS.—Mr. Nelder's comments (*antea*, vol. xlv, p. 430) prompted me to examine the data presented by Mr. Summers-Smith (*ibid*, pp. 153-167) in his paper on the Spotted Flycatcher (*Muscicapa striata*). I paid particular attention to the figures given in Table I. As Mr. Summers-Smith points out, there is no difference in the breeding season in different parts of the country, so there is no objection to using the total clutch column for analysis.

I found that the distribution in time shown in this column could be represented by two partially superimposed normal distributions; the probability that the differences between the observed and theoretical distributions were due to chance being well over 0.90.

This leads me to doubt whether the decline in nest-finding enthusiasm is as great as Messrs. Nelder and Summers-Smith suggest. I have attempted to set up models to represent the data using *skewed* distributions which might be expected if the decline in enthusiasm were serious. So far I have failed to find one that fits the data as well as the normal distributions mentioned above. While it is dangerous to draw definite conclusions from bimodal distributions it does seem to me that Mr. Summers-Smith's data are more reliable than he claims and that there can be no objection to his use of an estimate of error in this case.

ALEC BUTTERFIELD.

FIELD-CHARACTERS OF GREAT SHEARWATER.

To the Editors of BRITISH BIRDS.

SIRS,—E. M. Nicholson's paper on "Shearwaters in the English Channel" (*antea*, vol. xlv, p. 41) is a valuable contribution to the field identification of the shearwaters likely to be found in the Channel and approaches. R. Gillmor's excellent drawings show the specific characteristics very well, but perhaps one ought to point out an important plumage feature not brought out in the drawing of the Great Shearwater.

I refer to the dark mid-ventral patch which may be quite conspicuous in some birds. Murphy (*Oceanic Birds of South America* (1936), p. 661) describes it well, as follows: "feathers of central lower breast and belly with ashy brown tips forming a somewhat mottled elongate dirty brown patch".

The absence of this brown patch in Cory's Shearwater makes it a useful additional field characteristic which I have occasionally found valuable in the N. Atlantic when observing under difficult weather conditions. E. DUFFEY.

[I am grateful to Mr. Duffey for raising this point, and would agree that *where present* this dark patch is a useful additional character, but examination of skins confirms that it is not invariably visible in *gravis* and its absence therefore affords no guide as to the species. It was on this account that I did not ask Mr. Gillmor to give it more than the rather slight suggestion indicated in his sketch, although more definite patches might often be noticeable. This is another case where there is considerable individual variation among shearwaters.—E.M.N.].

SHEARWATERS IN THE ENGLISH CHANNEL.

To the Editors of BRITISH BIRDS.

SIRS,—I was greatly interested in Mr. Nicholson's paper on this subject. As I have been observing regularly from R.M.S. "Scillonian", on her day trips Scilly Isles—Penzance, from July to mid September since 1948, some interim remarks, accumulated from about 40 trips, may be useful. The Scilly Isles lie 28 miles S.S.W. from Lands End, and about 2½ hours are required to cross the open sea. From the bow of "Scillonian" the sea horizon is about 4¼ sea miles. It therefore follows that I have closely observed a very restricted sea area.

In general, during July-early August, the "Manx seaway" (which is about 1½ miles broad, lying between Lands End and the Wolf, and about 2 miles from the former) is in full use. It appears to consist solely of the more northerly breeding Manx Shearwaters moving between breeding and feeding stations. Between the Wolf and the Scilly Isles shearwaters are relatively uncommon. I have scrutinized a large number of the apparent Manx Shearwaters, especially away from the "seaway". If *mauretanicus*, in the dark phase, were occurring in any number during this period I feel that I should have seen at least isolated examples, but I have not yet met with even a doubtful one. It is much more difficult to give any opinion as to the occurrence of the light phase of *mauretanicus*, so I will only state that *Puffinus puffinus* does appear to be represented by clear-cut black-and-white specimens. So far my total for species other than Manx Shearwater is a very modest one:—*P. griseus* 2, *P. gravis* 1, *P. kuhlii* 2. (Details not received.—Eds.) An unrecorded "doubtful" was either *P. kuhlii* or *P. gravis*; it was too big for *mauretanicus*.

In discussing the field characters of *P. griseus* Mr. Nicholson does not mention the shape of the wing which is in my opinion very distinctive, appearing, as it does to me, like the blade of a ham-knife, only pointed. I would further add that any shearwater, which appears to be "bounding" more than the rest, should be critically examined. I shall of course review the whole situation in the light of Mr. Nicholson's paper. A. G. PARSONS.

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BRITISH BIRDS

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MIGRATION IN LATE SEPTEMBER AND EARLY OCTOBER, 1951.

BY

DAVID JENKINS.

(Continued from the March number, page 98.)

ARRIVAL OF THE NIGHT MIGRANTS IN BRITAIN.

Most of the records of the early October rush have been supplied by the Bird Observatories. Twelve species have been selected to demonstrate the course of the invasion and Tables XI-XVI are taken from the migration schedules of the six east coast stations.

I. *The east coast.*

The Robin was the most numerous species and the bulk of the arrivals occurred between south Scotland and Norfolk. Birds were recorded, however, along the whole of the east coast from Kent to the Shetlands.

A. Cley (see Table XI).

The passage may be considered to have begun on September 29th with the arrival of several Redstarts. The main arrival was on October 1st when species involved included Robin, Goldcrest and Song Thrush. There was a second movement on October 2nd when very large numbers of birds were seen between Cley and Blakeney Point. A large passage of thrushes (Blackbirds, Song Thrushes, Redwings, Fieldfares, Ring Ouzels) occurred on October 3rd and with them was a new, but smaller, arrival of Robins and Goldcrests. The continued presence of small passerine birds on the coast over a period of three days probably indicates a succession of arrivals. The passage was discontinued on October 4th.

TABLE XI: CLEY BIRD OBSERVATORY, (including 400 yards of coastline). NIGHT MIGRANTS.

	<i>September.</i>					<i>October.</i>										
	25th	26th	27th	28th	29th	30th	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Wren ...																
Song Thrush ...																
Redwing...																
Blackbird																
Redstart...	...	—	—	—	—	12	8	8	6	7	—	—	—	—	—	—
Robin	—	—	—	—	—	—	200	50	60	2	—	1	2	—	—
Blackcap	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
Garden Warbler	...	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—
Willow Warbler	...	—	—	1	—	—	—	—	5	—	—	—	—	—	—	—
Goldcrest	—	—	—	—	—	—	—	30	40	—	—	—	—	—	—
Pied Flycatcher	...	none recorded at the Observatory.														
Duncock	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—

none recorded at the Observatory but seen near by (Blakeney Point).

B. Gibraltar Point (see Table XII).

The main arrival of Robins and Redwings was on October 1st, of Goldcrests on October 4th and there was a large passage of Song Thrushes on the 2nd, 3rd and 4th. The Robin movement continued on a large scale on October 2nd and there was a smaller migration on the 3rd. Arrivals continued for the next two days, but virtually ceased on October 6th.

TABLE XII: GIBRALTAR POINT BIRD OBSERVATORY. NIGHT MIGRANTS.

	September.							October.								
	25th	26th	27th	28th	29th	30th	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Wren ...	—	—	—	—	—	3	—	2	7	6	5	—	—	3	2	2
Song Thrush ...	6	12	20	60	80	120	60	40	50	15	6	20	12	6	10	
Blackbird ...	—	12	5	4	5	10	10	6	12	6	20	12	6	20	12	
Redwing... ..	—	—	200	20	30	20	50	25	20	10	2	4	—	—	—	
Redstart... ..	1	1	5	10	3	2	3	1	4	1	—	—	—	—	—	
Robin	—	1	300	300	150	80	50	40	30	30	20	20	—	—	—	
Blackcap	—	—	2	3	—	2	—	—	—	—	—	—	—	1	—	
Garden Warbler ...	—	—	—	—	—	1	1	1	—	—	—	—	—	—	—	
Willow Warbler ...	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	
Chiffchaff	—	—	1	3	—	2	—	—	6	6	—	—	—	—	—	
Goldcrest	—	1	1	50	50	100	50	40	50	60	40	1	—	—	—	
Pied Flycatcher ...	—	2	1	—	—	1	1	—	—	—	—	—	—	1	—	
Duncock	—	—	6	—	5	3	3	5	—	12	20	12	10	10	12	

(No observation until September 29th).

C. Spurn Head (see Table XIII).

At Spurn, the passage began on September 30th and continued during the next week. The main Robin movement was on October 1st and 2nd, but as there were still birds present for the next seven days, it is likely that there were successive waves of migration. It is thought that the figures for this observatory may be underestimated, and it is possible that the centre of the first wave of migrating Robins may have arrived at Britain on the Yorkshire coast. There was a late migration of thrushes, but species other than Robins were not so numerous at Spurn as elsewhere.

Similar observations are reported from Cleethorpes, Lincolnshire, and from Scarborough, Yorkshire.

TABLE XIII: SPURN HEAD BIRD OBSERVATORY. NIGHT MIGRANTS.

	September.							October.								
	25th	26th	27th	28th	29th	30th	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Wren	—	1	1	1	—	1	—	1	1	1	1	—	4	1	2	2
Song Thrush ...	—	—	—	—	—	1	‡	‡	‡	‡	‡	50	‡	‡	‡	‡
Blackbird ...	—	6	4	6	—	6	‡	‡	‡	‡	‡	‡	‡	‡	25	‡
Redwing... ..	—	—	—	—	—	12	150	‡	‡	‡	‡	‡	‡	200	‡	100
Redstart... ..	1	4	1	—	—	4	20	20	12	6	7	2	1	—	—	—
Robin	—	—	—	1	—	1	300	500	500	300	300	‡	‡	100	—	—
Blackcap	1	—	—	—	—	—	1	8	1	1	—	—	—	1	—	—
Garden Warbler ...	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—
Willow Warbler ...	—	—	—	—	—	—	4	3	—	3	2	—	—	—	—	—
Chiffchaff	—	—	—	—	—	1	1	2	10	3	2	—	4	1	4	1
Goldcrest	—	—	—	—	—	2	2	50	‡	‡	‡	‡	‡	‡	‡	‡
Pied Flycatcher ...	—	2	—	—	—	—	2	—	—	—	1	—	—	—	—	—

[‡ shows that the species was observed, but actual counts were not made. A full explanation of the signs used in these tables can be found in the first part of this paper (*antea*, p. 73).]

D. Monks' House and the Farne Islands (see Table XIV).

There was little passage to the mainland. A single visit to the Farnes on October 5th, however, revealed considerable passage there. There can be little doubt that these birds were newly arrived as they would be unlikely to stay on these small inhospitable islands any longer than was necessary to rest themselves.

Reports from Holy Island and Bamburgh indicate that there were not unusual numbers of small passerine birds at these places on October 3rd or from October 7th onwards.

Although there were few arrivals in Northumberland, an observer in Co. Durham noted unusual numbers of Robins, Redwings, warblers and other night migrants near Sunderland on October 1st/4th. He believes that waves of migrants occurred each day.

TABLE XIV.
MONKS' HOUSE.

There was no passage to the mainland.

FARNE ISLANDS.

Only visited on October 5th,—night migrants seen :—

Wren ...	...	...	...	...	...	10
Song Thrush	...	...	...	...	...	50
Blackbird	...	...	...	...	...	150
Redwing	...	...	...	...	...	100
Redstart	...	...	...	...	...	2
Robin...	...	...	...	...	...	500
Blackcap	...	...	...	...	...	4
Garden Warbler	...	...	...	...	...	6
Willow Warbler	...	...	...	...	...	25
Goldcrest	...	...	...	...	...	100
Pied Flycatcher	...	...	...	...	...	1
Duncock	...	...	...	...	...	10

E. Isle of May (see Table XV).

The main migration to this island occurred on October 1st and 2nd. There were probably also smaller passages on subsequent days, as it is unlikely that many Robins and Goldcrests would stay on a small island after they had recovered from the effects of their journey.

TABLE XV. ISLE OF MAY BIRD OBSERVATORY. NIGHT MIGRANTS.

	September.						October.									
	25th	26th	27th	28th	29th	30th	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Wren ...	—	—	—	1	1	1	1	3	4	4	4	3	4	4	4	4
Song Thrush	3	3	1	—	6	3	40	50	50	40	40	40	30	20	15	10
Blackbird	1	1	—	1	—	3	25	15	20	12	10	100	40	20	10	8
Redwing...	—	—	—	—	—	1	20	50	150	30	25	15	20	20	6	6
Redstart...	3	5	3	2	1	—	3	5	6	3	2	2	—	—	—	—
Robin ...	—	—	—	—	—	—	600	600	400	200	150	100	70	40	30	25
Blackcap	1	—	—	—	—	—	7	5	6	2	3	2	1	1	—	—
Garden Warbler	—	—	—	1	1	1	7	1	4	1	1	—	—	—	—	—
Willow Warbler	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—
Chiffchaff	—	—	—	1	—	—	5	†	7	7	6	5	4	3	1	1
Goldcrest	—	—	—	1	—	—	35	35	35	20	20	14	6	6	6	—
Pied Flycatcher	—	1	—	—	—	2	4	4	3	1	1	—	—	—	—	—
Duncock	—	—	—	—	—	—	1	1	2	1	2	1	1	2	1	—

F. Fair Isle (see Table XVI).

There was little passage in the last week of September, but a movement of Redwings on the 30th foreshadowed a sudden invasion on October 1st. The species involved in greatest numbers were Goldcrest, Redwing and Robin. The schedule shows evidence of successive waves of passage. It may be noted that the winds bringing birds to Fair Isle were south-easterly and it is suggested that they were migrating with the wind, not into it.

TABLE XVI: FAIR ISLE OBSERVATORY. NIGHT MIGRANTS.

	September.						October.									
	25th	26th	27th	28th	29th	30th	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Song Thrush ...	—	—	—	—	1	4	20	5	30	50	20	10	10	10	10	6
Blackbird ...	3	3	4	4	3	2	10	12	20	40	40	20	20	20	20	20
Redwing...	13	10	—	4	—	25	500	300	500	500	500	500	100	100	20	20
Redstart...	7	7	5	4	3	2	7	4	8	4	3	4	1	1	—	—
Robin ...	3	1	—	—	2	—	30	50	75	75	50	25	4	10	2	—
Blackcap ...	—	2	—	—	—	1	5	9	7	4	7	1	—	—	—	4
Garden Warbler	1	4	1	2	1	1	5	5	4	2	—	—	—	—	—	—
Willow Warbler	2	1	3	5	1	1	12	6	2	2	4	2	—	1	1	—
Chiffchaff ...	—	—	—	1	—	—	4	16	9	3	4	3	—	2	—	3
Goldcrest ...	1	1	—	—	—	—	200	20	14	15	7	5	1	1	—	—
Pied Flycatcher	2	—	—	—	—	1	—	1	1	—	1	—	—	—	—	—
Duncock ...	—	—	—	—	—	—	—	5	9	6	4	5	—	—	2	—

Records from Scousburgh, South Mainland, Shetland, agree very closely with those from Fair Isle. Goldcrests, Redwings and Blackbirds arrived in numbers on October 1st and Robins on the 3rd and 4th. There was also a considerable passage of Skylarks on the 4th, 5th and 6th at Scousburgh.

Notes relevant to the invasion of passerine birds have also been received from other places on the east coast. In Suffolk there was a small passage of Robins to Walberswick, near Southwold, on October 2nd, 3rd and 4th and subsequently a rather larger immigration of Song Thrushes, with some Redwings, continuing from October 7th to 14th. The first Robins of all were 12 seen along the sea-wall near Midrips, Rye, Sussex, on September 29th. These, seen two days before the movement was recorded anywhere else, may or may not have been Continental birds. Near Eastbourne, Sussex, an increase in night migrating species (Turdidæ, warblers and others) was noted from October 2nd to 5th.

TABLE XVII: LITTLE ROSS LIGHTHOUSE, KIRKCUDBRIGHTSHIRE. NIGHT MIGRANTS.

	September.						October.									
	25th	26th	27th	28th	29th	30th	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Wren ...	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Redwing...	—	—	—	—	—	—	—	—	+	+	—	—	+	+	—	—
Redstart...	—	—	—	—	—	—	—	—	—	2	—	3	—	—	—	—
Robin ...	—	—	—	—	—	—	—	—	—	2	—	3	—	—	—	—
Willow Warbler	none recorded.						—	—	—	—	—	—	—	—	—	—
Chiffchaff ...	—	—	—	—	—	—	—	—	1	4	1	—	—	—	—	—
Goldcrest ...	—	—	—	—	—	—	—	—	—	13	7	23	—	—	—	—
Pied Flycatcher	—	—	—	—	—	—	—	—	1	1	—	—	1	—	—	—

(5 Goldcrests, a Garden Warbler, a Blackcap, 6 Song Thrushes and a Robin were captured at the light on October 11th).

2. *The west coast.*

If extensive drift took place across the North Sea from the Continent it might be expected that some birds would reach the west coast of Britain, and subsequently proceed southwards along it. Such an explanation may account for the most interesting observations made in early October at Little Ross Lighthouse, Kirkcudbright. These are set out in Table XVII.

However, at none of the three west coast observatories, Lundy, Skokholm and Great Saltee, was there any evidence of Robin migration.

TABLE XVIII: LUNDY BIRD OBSERVATORY. NIGHT MIGRANTS.

	September.							October.								
	25th	26th	27th	28th	29th	30th	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Wren ...	no evidence of movement.															
Song Thrush ...	—	1	1	1	1	—	—	9	2	1	6	1	1	1	2	1
Blackbird ...	11	11	14	11	10	11	10	35	21	14	40	13	†	17	20	24
Redwing...	—	—	—	—	—	—	—	50	40	8	6	—	1	1	2	1
Redstart...	—	—	—	—	—	1	—	5	2	3	7	1	—	1	—	—
Robin ...	17	17	20	15	14	10	9	15	22	19	22	16	†	16	13	—
Blackcap ...	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—
Garden Warbler	—	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—
Willow Warbler	none recorded.															
Chiffchaff ...	—	40	5	15	—	2	—	20	19	20	50	10	—	1	—	1
Goldcrest ...	—	1	—	7	1	—	3	4	2	1	2	4	1	1	4	8
Pied Flycatcher	1	2	2	2	5	4	3	6	3	2	4	—	—	—	—	—
Dunnock ...	2	5	2	2	3	4	2	2	4	6	6	2	1	3	3	—

TABLE XIX: SKOKHOLM BIRD OBSERVATORY. NIGHT MIGRANTS.

	September.						October.	
	25th	26th	27th	28th	29th	30th	1st	2nd
Wren ...	—	—	—	—	—	—	1	3
Robin ...	25	25	25	25	25	25	25	25
Willow Warbler	2	8	—	1	—	—	—	—
Chiffchaff ...	—	16	—	—	—	—	—	50
Goldcrest ...	—	—	—	—	—	—	—	3
Pied Flycatcher	none recorded.							

(There were no records of Garden Warbler, Blackcap, Song Thrush, Blackbird, Redwing, Redstart or Dunnock. Observations were not continued after October 2nd).

TABLE XX: GREAT SALTEE BIRD OBSERVATORY. NIGHT MIGRANTS.

	September.							October.								
	25th	26th	27th	28th	29th	30th	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Song Thrush ...	—	—	—	—	—	—	1	2	1	—	—	1	1	1	1	1
Blackbird ...	present throughout period: no evidence of migration.															
Redwing...	—	—	—	—	—	—	—	—	4	9	2	1	—	—	—	—
Redstart...	—	—	—	—	—	—	—	—	1	—	—	—	—	1	1	1
Robin ...	2	5	3	3	2	4	9	4	8	6	4	4	5	3	2	1
Blackcap ...	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—
Garden Warbler	—	—	—	—	—	—	1	1	3	2	1	—	—	1	—	—
Willow Warbler	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—
Chiffchaff ...	—	1	—	—	—	—	1	7	2	5	12	1	1	1	—	1
Goldcrest ...	—	—	—	—	—	—	—	—	—	1	1	3	2	1	2	—
Pied Flycatcher	1	1	—	—	—	—	3	2	—	—	1	—	—	1	1	—
Dunnock ...	as Blackbird.															

The coincidence of dates of arrival at both western and eastern observatories suggests that the birds involved were of similar origin. Further field work at Saltee and at Portland (see below) showed that some of the Chiffchaffs, Willow Warblers, Song Thrushes and Robins identified were of the northern races.

The observations from Little Ross Lighthouse suggest that west coast passage occurred. The succession of peak numbers of Chiffchaffs at Fair Isle on October 2nd, at Little Ross on 4th-5th, at Saltee and Lundy on 5th and at Portland on October 6th might be regarded as strong evidence for a major west coast passage of this species.

The duration of the Chiffchaff passage was very similar at these observatories, however, viz :—

Fair Isle	October 1st-6th (<i>cf.</i> Isle of May, 1st-5th).
Little Ross	October 3rd-5th.
Lundy	October 2nd-6th.
Saltee	October 2nd-5th.
Portland	October 3rd-8th.

The initial influx of Chiffchaffs to Fair Isle, Lundy, Skokholm, Saltee and Portland, places over 600 miles apart, on the same or successive days (October 2nd and 3rd) and the fact that the largest number of Chiffchaffs recorded was at one of the southern stations, Skokholm, on October 2nd is interesting.

An alternative explanation for the occurrence of the early birds at the western observatories is suggested by the fact that on the night of September 30th conditions were suitable for the northerly drift of birds from north-western France, or the Channel Islands, where it is known that there were very many Chiffchaffs (report from Jersey Bird Observatory). At 1800 hours on September 30th there was no cloud and little wind over the Cherbourg peninsula; at midnight there was fog and a south-easterly wind of force two, and the wind over Land's End was south-east by south with 8/8 cloud. Any birds migrating this night in the western Channel area would have been subject to northerly drift and might subsequently have been reported at the western observatories.

3. *The south coast.*

Half way along the south coast lies Portland. Near the Bill a mobile observatory, similar to that at Lista, was maintained during most of the period under review. Birds were caught and examined, and migration studied. The results are to be compared rather with those at Lundy, Skokholm and Saltee than with the east coast group. Birds heard flying over at night, and found in small numbers next day, indicated that there was a (relatively small scale) passage of nocturnal migrants, especially Turdidæ (mostly Blackbirds).

There was a movement of Chiffchaffs from October 3rd to 8th with an apparent peak on the 6th and during this period other warblers were seen. Goldcrests were seen from October 5th onwards, a few each day (one, found dead, was of the Continental race), but, apart from two trapped individuals of the Continental form, there was no evidence of Robin migration. Calls of Blackbirds heard at night gave the impression of a southward movement from October 1st onwards, but in the early morning of October 6th Song Thrushes were heard and seen coming in from the sea.

Migration occurred nightly from October 1st to 6th at St. Catherine's Lighthouse at the southern tip of the Isle of Wight. One observer spent the night of October 6th on the gallery there. He saw many Robins apparently arriving from the east, and a variety of other species, including Goldcrests, warblers, Skylarks and Meadow Pipits. The most numerous of the warblers were Chiffchaffs. These birds may have been on their way south from England, but with easterly winds still prevailing over the southern North Sea, they may equally have been fresh immigrants from the Continent, or have been coasting along the southern shores of England. The wind at the Isle of Wight was light and from the north-east, but weather conditions at the place where birds are seen are not necessarily those responsible for their movements.

DISCUSSION.

There are one or two features of interest which should not pass without comment. First, the migration took the form of an "avalanche," so called, at Ottenby. The great mass of birds passed through in two days. Yet the migration to British shores came as a series of waves lasting up to a week. This suggests that there was an accumulation of birds somewhere, probably in southern Norway or south-west Sweden, with a proportion departing daily. Alternatively the birds may have left the Continent progressively further south as the migration advanced. However, no Robins were reported from The Hague and there was no fog at night over the Low Countries between October 1st and 6th.

Reports from Germany support the first suggestion. At Lake Hidden (Rügen) in the north-east no Robins were seen until October 4th, a week after the first large number (72) was ringed at Ottenby, less than 200 miles away to the north-east. At Wangerooge no Robins were seen at all. At Amrum, the most northerly observatory, alone were they seen on October 1st and 2nd, and at Wilhelms-haven and Mellum there was no movement of Robins till October 3rd. It seems probable that there was a marked westerly drift north and east of the Baltic Sea to the shores of the Kattegat and Skagerak and that birds were held up there, perhaps by the prospect of a sea crossing, perhaps by fog, and that a proportion departed each night and were carried by wind drift to British shores.

It is noteworthy that no record has been received of Robins inland. These birds were the most widely noticed immigrants on the coast and reports of their arrival were published in the press and discussed over the wireless. Yet these all referred to the coast. One observer, operating chardonneret traps in his garden in Berkshire, described an increase in Chiffchaffs there between October 4th and 7th.

Few recoveries of ringed birds have yet been recorded. Three Robins, ringed at Spurn and Cley on October 1st and 2nd were recovered in northern Italy and in Minorca and it seems that these birds may have corrected their westerly drift on regaining the Continent. However, another Robin, marked on September 29th at Ottenby, was shot in December at Oran, Algeria, and this is due south-west from Ottenby. Several Song Thrushes were ringed in early October. Two ringed in Sweden and three ringed on the British east coast moved on to southern France and Spain, but another, trapped at the Isle of May, was recovered in Co. Durham nearly four months later.

No generalisations may be made about the destinations of birds migrating to and through Britain in early October 1951. They were stimulated to start migrating by anticyclonic weather conditions over northern Europe and some, probably the majority, continued their passage to winter quarters in southern Europe and North Africa. It is probably true to state, however, that the trans-North Sea movement would not have taken place in the absence of easterly winds and fog over southern Scandinavia and the Baltic.

SUMMARY.

1. It is shown that bird migration occurred in several waves in western Europe in September, 1951. At the end of the month a major peak of passage occurred.
2. The general pattern of the weather in September, 1951, in Europe is considered.
3. The meteorological conditions are analysed in relation to the migration peaks.
4. The general course of the major migration peak at the end of the month is considered.
5. It is shown that nocturnal migrants crossed the North Sea in considerable numbers at this time and possible causes of this movement are discussed.
6. An account is given of the migration at observatories and other places in the British Isles during the period September 25th to October 10th, 1951.
7. It is shown that passage occurred on the west coast as well as on the east coast of Great Britain.
8. Some recoveries of birds ringed in this period are noted.

APPENDIX : SPECIES INVOLVED IN THE EARLY OCTOBER RUSH.

Of these 75 species not more than 25 were recorded in the British Isles in any significant numbers during this movement. Most of the birds that reached this country were nocturnal migrants.

DIURNAL MIGRANTS (some also nocturnal).

Black-throated Diver (<i>Colymbus arcticus</i>)	House Martin (<i>Delichon urbica</i>)
Mallard (<i>Anas platyrhyncha</i>)	Hooded Crow (<i>Corvus cornix</i>)
Teal (<i>Anas crecca</i>)	Nutcracker (<i>Nucifraga caryocatactes</i>)
Wigeon (<i>Anas penelope</i>)	Great Tit (<i>Parus major</i>)
Pintail (<i>Anas acuta</i>)	Blue Tit (<i>Parus cæruleus</i>)
Red-breasted Merganser (<i>Mergus serrator</i>)	Meadow Pipit (<i>Anthus pratensis</i>)
Sheld Duck (<i>Tadorna tadorna</i>)	Tree Pipit (<i>Anthus trivialis</i>)
Grey Lag Goose (<i>Anser anser</i>)	Red-throated Pipit (<i>Anthus cervinus</i>)
Buzzard spp. (<i>Buteo</i> spp.)	Rock Pipit (<i>Anthus spinoletta</i>)
Sparrow Hawk (<i>Accipiter nisus</i>)	White Wagtail (<i>Motacilla alba</i>)
Kestrel (<i>Falco tinnunculus</i>)	Starling (<i>Sturnus vulgaris</i>)
Crane (<i>Grus grus</i>)	Greenfinch (<i>Chloris chloris</i>)
Lapwing (<i>Vanellus vanellus</i>)	Siskin (<i>Carduelis spinus</i>)
Ringed Plover (<i>Charadrius hiaticula</i>)	Linnet (<i>Carduelis cannabina</i>)
Grey Plover (<i>Squatarola squatarola</i>)	Twite (<i>Carduelis flavirostris</i>)
Golden Plover (<i>Pluvialis apricaria</i>)	Crossbill spp. (<i>Loxia</i> spp.)
Bar-tailed Godwit (<i>Limosa lapponica</i>)	Chaffinch (<i>Fringilla cælebs</i>)
Dunlin (<i>Calidris alpina</i>)	Brambling (<i>Fringilla montifringilla</i>)
Stock Dove (<i>Columba ænas</i>)	Yellowhammer (<i>Emberiza citrinella</i>)
Woodpigeon (<i>Columba palumbus</i>)	Little Bunting (<i>Emberiza pusilla</i>)
Short-toed Lark (<i>Calandrella brachydactyla</i>)	Reed Bunting (<i>Emberiza schæniclus</i>)
Woodlark (<i>Lullula arborea</i>)	Lapland Bunting (<i>Calcarius lapponicus</i>)
Skylark (<i>Alauda arvensis</i>)	Snow Bunting (<i>Plectrophenax nivalis</i>)
Swallow (<i>Hirundo rustica</i>)	

NOCTURNAL MIGRANTS (some also diurnal).

Spotted Crake (<i>Porzana porzana</i>)	Blackcap (<i>Sylvia atricapilla</i>)
Wren (<i>Troglodytes troglodytes</i>)	Garden Warbler (<i>Sylvia borin</i>)
Mistle Thrush (<i>Turdus viscivorus</i>)	Whitethroat (<i>Sylvia communis</i>)
Fieldfare (<i>Turdus pilaris</i>)	Lesser Whitethroat (<i>Sylvia curruca</i>)
Song Thrush (<i>Turdus ericetorum</i>)	Willow Warbler (<i>Phylloscopus trochilus</i>)
Redwing (<i>Turdus musicus</i>)	Chiffchaff (<i>Phylloscopus collybita</i>)
Ring Ouzel (<i>Turdus torquatus</i>)	Yellow-browed Warbler (<i>Phylloscopus inornatus</i>)
Blackbird (<i>Turdus merula</i>)	Goldcrest (<i>Regulus regulus</i>)
Wheatear (<i>Enanthe ænanthe</i>)	Spotted Flycatcher (<i>Muscicapa striata</i>)
Stonechat (<i>Saxicola torquata</i>)	Pied Flycatcher (<i>Muscicapa hypoleuca</i>)
Whinchat (<i>Saxicola rubetra</i>)	Red-breasted Flycatcher (<i>Muscicapa parva</i>)
Redstart (<i>Phænicurus phænicurus</i>)	Dunnock (<i>Prunella modularis</i>)
Black Redstart (<i>Phænicurus ochrurus</i>)	Great Grey Shrike (<i>Lanius excubitor</i>)
Bluethroat (<i>Luscinia svecica</i>)	
Robin (<i>Erithacus rubecula</i>)	
Grasshopper Warbler (<i>Locustella naevia</i>)	
Sedge Warbler (<i>Acrocephalus scænobænus</i>)	

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THE BIRDS OF BARDSEY ISLAND IN 1952.

BY

C. A. NORRIS.

It is remarkable that an island as well situated as Bardsey should be so little known to ornithologists. It is now 40 years since Dr. N. F. Ticehurst paid his visits from June 12th to June 25th and from September 3rd to September 22nd, 1913, the latter with J. K. Stanford (Ticehurst, 1919-20). His report on the breeding birds is the most complete, but some interesting comparisons can be found in the paper by Wilson (1930) which is based on notes made on Bardsey by G. H. Emerson and others "at Easter" that year, and by Emerson and Wilson himself from June 16th to 25th, 1930. This is the most recent report on the breeding population.

Two earlier visitors to Bardsey, O. V. Aplin (May 23rd and 24th, 1901) and T. A. Coward (June 14th to 16th, 1905) have given detailed accounts of their findings. C. Oldham was on the island in October, 1914, but his notes have never been published, and F. W. Headley watched the autumn migration there from September 27th to October 30th, 1919 (Headley, 1920). A winter visit was made in 1934 by R. M. Lockley and an account of the place with a few notes on birds is given in his *I Know an Island* (1938).

The notes that follow are based on my own observations during June 25th and 26th, 1952, supplemented where indicated with information gained from Mr. Alan Till of Cristin, one of the light-keepers who was formerly stationed at Skokholm, from Mr. Van de Byl of Carreg, and from Mr. Griffiths of Nant, to all of whom I am indebted. In the classified notes that follow the general description an attempt has been made to indicate some of the changes in status that have taken place as some of these are of special interest. It must be emphasized that a total of only twenty hours was spent in systematic search so that inevitably a certain amount will have been missed. It was my intention to obtain a general picture of the breeding population so that this could be used for comparison if and when a visit during the main migration period should prove possible. That the island is much visited at times of migration is borne out by the lighthouse-keepers who report thousands of birds at the light under suitable weather conditions, and is amply shown by the fact that Ticehurst's list contains more than 100 species compared with some 46 which I believe to have been resident and breeding there.

GENERAL DESCRIPTION.

Bardsey lies $1\frac{3}{4}$ miles south-south-west of the westernmost tip of the Lleyn Peninsula in north-west Wales. The most western tip of Holyhead Island lies slightly east of north some 38 miles distant, while St. David's Head in Pembrokeshire is just over 60 miles south-south-west. Bardsey itself is about $1\frac{3}{4}$ miles long, with its axis running N.N.E. to S.S.W., and is just under $\frac{3}{4}$ mile across at its widest point. The main geographical feature, and virtually the only one visible from the mainland, is the 548 feet high mountain which occupies almost the whole of the east side of the island. The west side of the island is gently sloping and it is this part that is still farmed. The southern end, which is reached by a narrow neck of land which separates Port Solfach, on the west, from the harbour, on the east, is given over to sheep-grazing and, apart from a little gorse, there is practically no cover. The powerful lighthouse is in the centre of this area.

The most important area for the land species is that which lies to the west of the mountain, and since it is this part which is farmed, it is necessary to consider alterations in the environment in order to follow the changes in bird life. In the last 25 years there

has been a steady diminution in the island's human population and today only three of the houses are occupied by farming communities and the total population including three lighthouse-keepers is only 14. When Lockley visited the island just before the recent war there was a population of 35. Today sheep, cattle and lobster-fishing are the main activities and practically the whole of the agricultural area is down to permanent grass. With the decrease in population an air of neglect hangs heavily over many of the cottage gardens, some of which are now overgrown with bracken, fuchsia, etc., which give shelter to several species. Two other features are of note. As elsewhere in Wales high banks, frequently topped with gorse, form the borders of the fields and where these have become overgrown they provide a considerable amount of cover. Of great value is the small stream which flows through the centre of the agricultural area and connects three small derelict withy-beds. The map accompanying Lockley's account shows eleven of these beds which must certainly have been an added attraction.

Both on the west side of the island, between the agricultural area and the low cliffs and rocks that border the sea, and on the south and west sides of the mountain there are extensive patches of gorse which are much frequented by Linnets (*Carduelis cannabina*) and a few scattered pairs of Stonechats (*Saxicola torquata*).

CLASSIFIED NOTES.

[STORM PETREL (*Hydrobates pelagicus*).—This species had been one of the objectives of the visit, but not a trace could be found. Every wall near the sea was examined for the characteristic smell and innumerable holes and crevices were similarly inspected. No one to whom I spoke had any recollection of the bird and no tell-tale corpses could be found.]

MANX SHEARWATER (*Puffinus puffinus*).—There appear to be two main breeding colonies, one on the north end of the mountain and the other on the east side. The northern colony was visited after dark and considerable activity was in progress. While it was impossible to gain an accurate idea of numbers in such a short visit, especially as many of the nest-holes were concealed by bracken, I feel sure that in this colony alone there were far more than the 30-40 pairs recorded by Ticehurst in 1913. I would be surprised if there were less than 100 pairs and I was informed that the other colony was of a similar size. Presumably an increase took place between 1913 and 1930, for Wilson suggested that there must have been "thousands of them" at the time of his visit in the latter year. In marked contrast to other Manx Shearwater colonies that I have visited, the number of dried corpses to be found dotting the island was very small. The fact that only three or four pairs of Great Black-backed Gulls, and no Lesser Black-backed Gulls, were seen may well account for this.

[FULMAR (*Fulmarus glacialis*).—Although none was seen by me, either on the island or the adjacent mainland, I gathered that they have been observed from the fishing-boats. As far as I could learn, the species has not apparently taken any interest in the island's cliffs.]

GANNET (*Sula bassana*).—One was seen at some distance from the south end, and another during the crossing from Bardsey to the mainland. Both were adults.

SHAG (*Phalacrocorax aristotelis*).—At three separate places on the east side small numbers were breeding with a total population of about 25 pairs. The first time this species was definitely recorded as breeding was in 1930 by Wilson.

HERON (*Ardea cinerea*).—One was feeding in a small pool near one of the withy-beds on June 26th.

RED-BREASTED MERGANSER (*Mergus serrator*).—A female was noted for a short while in Porth Solfach on June 26th.

PEREGRINE (*Falco peregrinus*).—What I took to be a bird of this species was seen at a considerable distance on the east side of the mountain. I did not discover if the species was breeding. Wilson recorded that a pair had attempted to nest in 1930.

CORNCRAKE (*Crex crex*).—In June, 1913, Ticehurst reported that "its voice was constantly heard by day and night all over the cultivated area. I computed the population as at least ten pairs." In 1930, Wilson found only "three or four pairs" nesting. In June, 1952, I heard not a single bird although the weather was ideal. Two islanders that I asked thought that they had heard the bird earlier in the year. It is certain that the decrease that has hit this species in so many places has taken place here also. The fact that there are mowing machines on the island, one drawn by tractor, and that the hay harvest was already in progress on June 25th suggests that these factors have been responsible here as elsewhere.

MOORHEN (*Gallinula chloropus*).—A single pair were reported to be attempting to breed on the small pool against one of the withy beds, but their eggs were plundered as fast as they were laid.

OYSTERCATCHER (*Hematopus ostralegus*).—When following the coast round the island I was practically never out of sight and sound of these birds with a pair to every 100 yards or less, the numbers being slightly smaller on the east side below the mountain.

LAPWING (*Vanellus vanellus*).—Although I did not see a single bird of this species, I gathered that a few had been about earlier in the year and that they may have nested.

RINGED PLOVER (*Charadrius hiaticula*).—Only three were seen by me. One pair had attempted to breed near the lighthouse, but some predator had removed the eggs. They were reported to be breeding at the north of the island, but I did not see them there.

CURLEW (*Numenius arquata*).—Odd birds, pairs and small parties of up to five in number were seen regularly in the agricultural belt and along the west coast. The rocks, called Careg Yr Honwy, off Porth Solfach, which were much used by seals and gulls as a resting place, were also being used by this species as a place of retreat.

REDSHANK (*Tringa totanus*).—Birds of this species were occasionally disturbed both from the harbour and from Porth Solfach. Once a party of 12 was seen flying out to the "seal rocks."

GREAT BLACK-BACKED GULL (*Larus marinus*).—At most there were four pairs spaced at intervals below the mountain on the east side. In 1913, two pairs nested, but Wilson did not find the species breeding in 1930 although birds were seen.

[LESSER BLACK-BACKED GULL (*Larus fuscus*).—Wilson in 1930 recorded 4 nests and estimated that there was one pair of these to every 100 Herring Gulls. In 1952, I was unable to find any.]

HERRING GULL (*Larus argentatus*).—From the south end of the mountain, all along the east side to the mountain's northern end there was an almost continuous colony. I made no attempt to estimate numbers, but there must have been several hundred pairs.

KITTIWAKE (*Rissa tridactyla*).—Neither Aplin, Coward nor Ticehurst found this bird nesting and it was not mentioned by Wilson. From islanders I gathered that the present breeding-colony was established only some three or four years ago. The breeding-sites are in two main localities, both below the mountain, and these were examined at close quarters from the boat both on

arrival and departure. Rather hurried counts made on both occasions suggest that there are between 100 and 150 pairs.

RAZORBILL (*Alca torda*).—Like the Herring Gull this species was breeding along almost the whole of the east side below the mountain. Some idea of numbers may be gathered from the fact that at about 7 p.m. I counted over 270 sitting out on the sea. The number that were on the ledges and in the crevices below me could not be judged, but when examined from the sea their numbers appeared to be many times the "at least twenty pairs" recorded by Ticehurst. Wilson in 1930 included this in a list of species whose status appeared unaltered since 1913.

GUILLEMOT (*Uria aalge*).—As far as I could judge there were at most 50 birds on ledges at two places towards the southern end of the eastern cliffs. Coward in 1905 states "and probably some hundreds sitting on the white-washed ledges," but of this there was no suggestion in 1952.

PUFFIN (*Fratercula arctica*).—On the journey out to the island we saw a party of 12, but these were the only ones seen. From islanders and fishermen in Aberdaron I learnt that they are breeding on the Gull Islands, Ynys Gwylan-fawr, but that they are never seen actually on Bardsey. Wilson did not see a single bird in 1930.

CUCKOO (*Cuculus canorus*).—During my stay I neither saw nor heard this species though I was informed that they had been common enough early in the month and that they were certainly breeding.

LITTLE OWL (*Athene noctua*).—A single bird was calling from the ruins of St. Mary's Abbey late on June 25th and during the early hours of June 26th. Not recorded by any of the previous visitors.

SWIFT (*Apus apus*).—None was seen on June 25th, but on the 26th at 6.45 a.m. a party of eight was heard and then seen high over Tybach. These birds were flying steadily at a height of some 200-300 feet and heading south-south-west. In the next fifteen minutes three other parties were noted following the same course. Between 9.15 a.m., and just before 11 o'clock, when I left the south point, fourteen parties were seen totalling 58 birds. All these were flying on the same course, but at the south end of the island it was noticed that they were keeping at under 100 feet, and in some cases were as low as 20 feet or less while over the land, and then could be seen rapidly gaining height as they left the island. The birds seen at Tybach earlier on, having only just arrived over land, may well have been losing height. On the 26th no individuals were seen feeding over the island.

SKYLARK (*Alauda arvensis*).—As far as I could judge there were not less than three birds within hearing of Porth Solfach and two of these were south towards the lighthouse. I neither saw nor heard this species in the northern part of the island. The breeding of the Skylark was first recorded by Wilson (1930) who said that "several pairs were nesting in the cornfields near the landing-place."

SWALLOW (*Hirundo rustica*).—Some three or four pairs appeared to be resident. One pair was certainly nesting in an outhouse at Plasbach and two pairs were at Typellaf. Two or three birds were frequently seen round the Nant farm buildings.

SAND MARTIN (*Riparia riparia*).—A single bird was seen on June 26th feeding in the Typellaf area.

RAVEN (*Corvus corax*).—Two pairs in residence. One pair, with three young, had nested at the extreme south tip and the other pair, with four young, had nested near Seal Cove on the north-east cliffs.

CARRION CROW (*Corvus corone*).—At least two pairs and probably three or four. One pair had nested only a few feet from the ground in one of the diminutive withy-beds.

JACKDAW (*Corvus monedula*).—The largest number seen was a noisy party of about 30 on the north-east cliffs where no doubt they nest in the numerous crevices.

MAGPIE (*Pica pica*).—At least one pair had nested at the larger of the overgrown withy-beds below Cristin. Five birds, presumably a family party, were seen. The species was not recorded by previous visitors.

CHOUGH (*Pyrhcorax pyrrhcorax*).—All told seven birds were seen. These consisted of one pair, whose nest at the south end of the island had been robbed early in the year, and a family party of two adults and three young on the north-east cliffs.

WREN (*Troglodytes troglodytes*).—Not recorded either by Aplin or by Coward, but Ticehurst noted that they were fairly common in some areas. I found them dotted about all along the east side of the mountain and in many other places.

BLACKBIRD (*Turdus merula*).—In marked contrast to the findings of Ticehurst I saw not a single bird on my first day and only two birds, that I took to be females, on the second. Ticehurst reported "it is numerous all over the cultivated part of the island," and Aplin, "very conspicuous and tame." Wilson included this in a list of species whose status seemed unaltered since 1913.

WHEATEAR (*Ænanthe ænanthe*).—In all under half a dozen birds were seen so that breeding, if in fact taking place, was on a smaller scale than was recorded by Aplin and Coward. Ticehurst, however, did not see them at all in June, 1913, and Wilson saw only the one pair whose nest he found.

STONECHAT (*Saxicola torquata*).—At least one and probably two pairs were found in the gorse area not far from Porth Solfach.

ROBIN (*Erithacus rubecula*).—At least two pairs in residence. The pair near Plasbach was feeding young. The other was frequently about Tybach where I was staying.

SEDGE WARBLER (*Acrocephalus schænobænus*).—Two pairs were located, one in the most southerly withy-bed and the other in the overgrown corner of a field within 100 yards.

WHITETHROAT (*Sylvia communis*).—Certainly not more than half a dozen pairs, spread rather widely among overgrown gardens and field edges. Reported by Aplin and Coward, but not by Ticehurst. Wilson in 1930 also located "five or six pairs."

WILLOW WARBLER (*Phylloscopus trochilus*).—A single bird was heard once near Typellaf on June 25th, but not again, although the place was visited on four or five subsequent occasions.

[SPOTTED FLYCATCHER (*Muscicapa striata*).—Reported by both Aplin and Ticehurst, but not by Coward, Wilson or the writer.]

HEDGE SPARROW (*Prunella modularis*).—A few near the farms and in some of the overgrown field boundaries. Probably under 6 pairs.

MEADOW PIPIT (*Anthus pratensis*).—As in previous years this bird was to be found with pairs scattered all round the slopes of the mountain and over much of the agricultural area as well.

ROCK PIPIT (*Anthus spinoletta*).—Common all round the island with pairs never more than 50-100 yards apart. Ticehurst obviously found them less common.

PIED WAGTAIL (*Motacilla alba*).—At least two pairs nested on the island and at the time of my visit both were feeding young.

STARLING (*Sturnus vulgaris*).—In all only five adult birds were seen and of these two were feeding at Typellaf and two others were at Nant. The fifth was the only adult discovered amongst well over 300 juveniles that were carefully examined whilst they were feeding and resting on a wire fence. The very large numbers of young birds that were to be found everywhere in the agricultural zone (their numbers at dusk on June 25th must have been not far short of 5,000) particularly attracted my attention. Shortly after 7 a.m. on June 26th I noticed a party of about 150 pouring vertically down onto the island from a height of 400-500 feet in the manner frequently adopted by this species when first entering a roost at dusk. In the course of the next hour a succession of parties, varying from about 50 to well over 300 birds, arrived in a similar manner and it was possible to establish that these birds



LITTLE BITTERN (*Ixobrychus minutus*).
MALE PANTING WITH OPEN BILL AS HE SHIELDS NESTLINGS
FROM THE SUN.
HOLLAND.
(Photographed by ERIC HOSKING).



LITTLE BITTERN (*Ixobrychus minutus*).
MALE SETTLING DOWN TO INCUBATE.
CAMARGUE, SOUTH FRANCE.
(Photographed by H. A. PATRICK).



LITTLE BITTERN (*Iacobyichus minutus*).
FEMALE PARTLY SHIELDING THE YOUNG. THE BILL IS OPEN
AND THE REMARKABLE EXTENT OF THE GAPE CAN BE SEEN.
HOLLAND.
(Photographed by ERIC HOSKING).



LITTLE BITTERN (*Iacobyichus minutus*).
FEMALE STANDING OVER THE EGGS, IN PROTECTIVE POSTURE
WITH NECK AND BILL EXTENDED VERTICALLY UPWARDS AND
BODY SUPPORTED ON THE TARSI.
CAMARGUE, SOUTH FRANCE.
(Photographed by WALTER E. HIGHAM).



LITTLE BITTERN (*Ixobrychus minutus*).
MALE AT NEST WITH YOUNG.
HOLLAND.
(Photographed by ERIC HOSKING).



LITTLE BITTERN (*Ixobrychus minutus*),
MALE REGURGITATING FOOD AS ONE OF THE YOUNG PULPS AT HIS BILL,
HOLLAND,
(Photographed by ERIC HOSKING).



LITTLE BITTERN (*Ixobrychus minutus*).
FEMALE STANDING OVER YOUNG AND REGURGITATING A FISH.
HOLLAND.
(Photographed by ERIC HOSKING).



LITTLE BITTERN (*Ixobrychus minutus*).
MALE AND FEMALE AT NEST TOGETHER.
HOLLAND.
(*Photographed by ERIC HOSKING.*)



LITTLE BITTERN (*Ixobrychus minutus*).

PAIR AT NEST. MALE STANDING OVER YOUNG AND TURNING HEAD AS HE PREPARES TO LEAVE.

HOLLAND.

(Photographed by ERIC HOSKING).



LITTLE BITTERN (*Ixobrychus minutus*).
MALE TUGGING AT NEST MATERIAL AS FEMALE ARRIVES AT NEST.
THE DISTINCTIVE, ROUNDED PATCH FORMED BY THE BUFF-WHITE
WING-COVERTS OF THE MALE CAN WELL BE SEEN HERE.

HOLLAND.

(Photographed by ERIC HOSKING).

were arriving over the island from the north-east and not, as I had at first thought, merely coming over to feed from some cliff roost on the east side of the mountain. Later in the morning, near the south end, successive parties were seen partaking in mass aerial manoeuvres, gradually gaining height and eventually leaving on a south-south-west course, though occasional parties doubled back to the island. As time was very limited I had to leave the south end just before 11 a.m., but I noticed when retracing my steps across the agricultural zone that I saw less than 50 Starlings. From this it would appear that the island had been used as a resting-place over-night and that the movement had continued during the morning. Ticehurst recorded autumn passage from the first week in September to the end of November and notes that "Occasional records at the end of July possibly represent the departure of some of the local young." He also reports that in June, 1913, the species was numerous all over the island except in the southern half and on the higher parts of the mountain. During my observations there was one period when several hundred were feeding near the lighthouse, but later they had departed.

LINNET (*Carduelis cannabina*).—With the possible exception of the Meadow Pipit, this was probably the most common passerine species breeding on the island. Only on the top and on the east side of the mountain were numbers found to be small. This species seemed to be a good deal more numerous than at the time of Ticehurst's visit.

CHAFFINCH (*Fringilla caelebs*).—Only a single female was seen, and this was lurking in one of the withy-beds. Aplin in 1901, found it "Fairly common, and in fine song," but neither Coward in 1905, Ticehurst in June, 1913, nor Wilson in 1930, recorded the species.

[CORN BUNTING (*Emberiza calandra*).—Since Aplin, Coward and Ticehurst all reported this to be one of the common species it is interesting to note that Wilson in 1930 saw only one and I did not see a single individual either on the island or, for that matter, in two days wandering in the Aberdaron area.]

YELLOWHAMMER (*Emberiza citrinella*).—In all probability under 6 pairs. One pair was feeding young in the garden of Cristin and another pair was located near the most southern withy-bed. A third pair was on the south end of the mountain near Typellaf. None of the previous reports on the island records this species in the breeding-season.

HOUSE SPARROW (*Passer domesticus*).—Probably 20 or more pairs. The largest number seen in any one hour was just over 20 birds near Typellaf, but all the occupied buildings seemed to have pairs in residence. The sparrow population is certainly not as conspicuous as would appear to have been the case at the time of Lockley's visit. No doubt the diminution in human population, together with a corresponding decrease in the number of poultry, is responsible.

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[A photograph of Bardsey Island will appear in the May number and we shall shortly be publishing a similar paper, by R. F. Thearle, J. T. Hobbs and James Fisher, on the birds of the St. Tudwal Islands, which lie some 14 miles to the east of Bardsey.—EDS.]

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED

XLVIII. LITTLE BITTERN.

Photographed by WALTER E. HIGHAM, ERIC HOSKING

AND H. A. PATRICK.

(Plates 17-24).

MOST of these fine photographs of the Little Bittern (*Ixobrychus minutus*) were taken in Holland, the others in the Camargue—two localities which give some indication of the breeding range of the species close to Britain, in spite of the fact that it is no more than a casual visitor here, chiefly to the south and east coast counties. However, in view of its crepuscular habits and the difficulty one can have in flushing it, this bird is certainly overlooked, perhaps also because it utters no sound comparable to the loud “booming” of the Bittern (*Botaurus stellatus*), for the spring note of the male is a croaking cough which, though carrying some distance, does not attract attention in the same way. The typical race of this species breeds in much of Europe, south to include North Africa and east to India; it is replaced by other forms in the rest of Africa and in Australasia, and there are allied species in most of the world including America.

One of the smallest of all herons, its body the size of a dove, the Little Bittern has the added distinction, for a heron, of differently plumaged sexes. In plate 22 the male’s “black-and-white” appearance which often seems more striking than *The Handbook* plate would suggest can well be compared with the striated, browner plumage of the female. The characteristic shape of the distinctive rounded patch formed by the whitish-buff wing-coverts of the male should be noted in plates 17 (right) and 24, among others. In the female this patch is not so striking, and the under-parts are more streaked, but this makes more effective the remarkable protective posture (plate 18, left), characteristic of reed-nesting herons, with neck and bill extended vertically upwards and, sometimes, the body supported on the tarsi. The whole appearance of light and dark, reed-like streaking as the bird keeps its breast—and its yellow eyes goggling—towards the intruder is also helped by the pale leading edge to the folded wing.

Unlike some of the larger bitterns, the male Little Bittern takes a considerable share in incubation and plate 17 (left) shows one about to settle down on the clutch of roundish, white eggs. The nest in this plate is in a typical site, but some idea of the greater range of breeding habitat agreeable to this species than to the common Bittern can be obtained from the other plates which show a nest built of reeds, but in cover formed by a mixture of brambles and broad rushes. In many parts of its range this bird nests in such cover on the banks of rivers and lakes.

The young are fed by regurgitation stimulated, as shown in

plate 20, by the nestling's pulling downwards at the adult's bill. Plate 21 shows a fish about to be passed by the female to a chick; the size of the fish the young can swallow is remarkable—even half as big as themselves—but some idea of the extent of the gape of these birds is given by the female shown in plate 18 (right).

I. J. F.-L.

SECONDARY SONG: A TENTATIVE CLASSIFICATION.

BY

M. D. LISTER.

MY object in this short paper is to suggest a more exact terminology as a preliminary to further investigation of the fascinating problems of those quiet secondary songs which, since Nicholson (1927) drew attention to them, have come to be generally known as "sub-song."

In discussing bird song in general terms in a later book (1936), Nicholson wrote: "For clarity's sake it may be well here to reserve the word 'song' for full or true songs consisting of a flow or pattern of notes warbled or otherwise delivered more or less at the top of the bird's voice, separating as sub-song all similar performances which are so inwardly or faintly delivered that they do not carry to anywhere near the distance over which the bird is physically capable of making itself heard, and classing as breeding notes all those sounds, vocal or non-vocal, which seem in some ways analogous to true song but are not generally regarded as songs." This is a very wide definition of sub-song, embracing virtually all song which is given more quietly than the specific song which we are apt to think of as the "normal" loud song of the species concerned. A study of the subject over more than twenty years suggests, to my mind, that there are various kinds of quiet songs which may be distinguished from each other in their character and import.

Compare the following examples of quiet songs of different character:—

- A. DUNNOCK (*Prunella modularis*). February 2nd, 1936. A bird was singing almost continuously from an apple tree. As I approached the song became fainter until it was only just audible 5-6 yards away. There was no apparent break between the loud and the quiet song, nor were the characters of the two songs different in any apparent way.
- B. DUNNOCK. February 5th, 1939. One sang by a clump of bushes at first a low version of the specific song, uttered apparently while foraging, audible about 5 yards. The bird then moved under the bush, giving the most astounding song—it was very quiet, but what it lacked in volume it made up in quality—which was a warbling of the highest order, with trills and fluting notes and little rattling blemishes. If I had not actually seen the bird singing, I should

have been inclined to identify it as a Garden Warbler (*Sylvia borin*). The song was not divided into the Dunnock's usual twin-linked phrase, but consisted of an almost continuous ripple of warbling—one burst must have lasted almost 30 seconds, and I timed another to last 20. After giving this song for some minutes the bird worked its way into the upper part of the bushes and gave a loud song in the usual mould—the first time this was given I noticed no addition to the normal song, but the second repetition was so garnished that only the bare theme of the specific song was recognizable. I neither saw nor heard any sign of any other Dunnock in the vicinity.

- C. DUNNOCK. June 1st, 1934. One gave the ordinary song fairly loudly from a tree, but trailed off into a very low warbling without any apparent break, audible only 8-10 yards away. At first the song included the ordinary song-phrases, but the latter quiet part of it sounded much sweeter and none of the notes present in the normal song were recognized. Only one bird seen.
- D. CHAFFINCH (*Fringilla cœlebs*). August, 1935. A loose party of young birds, almost all cocks, were foraging daily in an orchard and very frequently gave a warbling song which was quite different from the specific "territorial" song, though the rhythm and balance of this were occasionally recognizable. After a few days the true song began to emerge clearly from the matrix of warbling. The warbling was usually soft and sometimes only just audible a few yards away, though most of the birds sang fairly loudly.
- E. LINNET (*Carduelis cannabina*). July 8th, 1934. A hen perched in a tree and sang for over a minute—this song was quite distinct from the usual loud song of the cock, being much softer and very much more inward. It was very sweet, with very few (if any) discordant notes, and more like a low, rather twittering warble, for it was almost continuous.

In all these cases the songs were audible for only a very few yards and had a somewhat "inward" character. In A, however, the song, though very quiet, remained exactly similar to the normal, loud (primary) song, but in C the latter part differed considerably from the primary song, while in B the song differed from it in every possible way.

D, again, clearly had a connection with the primary song, as the series of records I obtained at that time suggested strongly that the primary song was emerging from and apparently developing out of the general indefinable matrix of warbled notes in which all the birds indulged, and that the warbling was merely an early stage in

the development of the primary song. E is a case of a quiet song given by a hen bird, differing from the primary song of the cock, and is probably nearer in character to the song in example C than those in either A, B or D.

These are only five typical examples. Others could be quoted from my own notes, and there must be many observers who have similar records. It seems reasonable to suggest that a distinction can legitimately be drawn between at any rate two main types of quiet song; on the one hand, the quiet version of the normally loud "territorial" or primary song, and on the other, the quiet songs which differ intrinsically from the primary songs. In support of this is the fact that the primary song of some species on occasion passes through all degrees of loudness from one extreme to the other; I have notes on Dunnock, Robin (*Erithacus rubecula*) and Song Thrush (*Turdus ericetorum*) where the loudness of the songs given by the same bird during a single spell of observation ranged from the "normal" down to the merest whisper, audible for only a few yards, though apart from the volume I could detect no difference in their character. In the case of Dunnock, Robin and Garden Warbler I have heard the very quiet version of the normally loud song given immediately after, or in the middle of, a normally loud song with no appreciable pause between the two.

It is not really surprising that in the scanty written matter on a subject which is yet so imperfectly understood, some confusion should have arisen in the terms used by different writers. The term "recording" is a good example of this. Nicholson (1927) refers to "the whispering soliloquy, called recording, heard from blackcaps and other warblers sitting hidden in dense bushes, most often in the autumn . . .," while Morris (1925) writes of "the utterance of one phase of bird song, apparently confined to birds of the year . . ." as "the phase known to fanciers as recording," and continues: "The expression *Rehearsed Song* is perhaps more suggestive."

While classification and sub-classification is inevitable in this age of specialisation, it may be at best an unsatisfactory process in the case of such difficult material as bird-song, where each observer hears something different and describes it accordingly. However, some classification is necessary for a better understanding of the subject, though it must be recognized that further research may make it necessary to modify or alter, or even to abandon altogether, any classification which is made at this early stage of investigation. At the risk of abuse from those to whom "sub-song" will always be any kind of quiet song, I suggest that confusion may be avoided if all observers use the same terminology, and with some hesitation I suggest the following:—

PRIMARY SONG: The normal loud specific song, which is most

in evidence in spring, but is given by some species at other seasons as well—for which Nicholson (1936) reserves the term “song.” In those species which hold a territory it is this song chiefly which seems to have most territorial significance. The essential ingredients are its comparative persistence and loudness. While it is usually given loudly to very loudly, the degree of loudness varies considerably even with the songs given by a single bird. I will not attempt to subdivide this category, as the subject of the present paper is “Secondary Song,” but the significance of all songs comprised in it is not necessarily always the same in all cases.

SECONDARY SONG: All other songs, which owing to their quietness or the infrequency with which they are given, do not come within the definition of “primary song.” “Secondary song” would include the following:—

Whispering song: the very quiet, inward rendering of the primary song, with or without slight variations or additions. I hesitated long before suggesting a separate name for this kind of song in view of the obvious difficulty of deciding just where it merges into the loud primary song, but it seems advisable for purposes of future research to be able to distinguish by name the ultra-quiet versions of the primary song from “sub-song” as defined below. While the boundary between primary song and whispered song must necessarily be somewhat elastic and indefinite, the latter is usually, though not invariably, given somewhat inwardly and is often audible at no more than a very few yards. I suggest as a working basis an audibility limit of no more than about 20 yards in order to ensure that only the quietest of these songs is referred to as Whispering Song. I have heard this kind of song in every month of the year.

Sub-song: Hitherto, I feel, the range of songs included in this term has tended to be too wide. If Whispering Song is treated separately, I think the term “sub-song” should be reserved for the very quiet inward rendering of song which is intrinsically different from the primary song. Sub-song in this sense is very often a free, random, *sotto voce* warbling, sometimes with other recognized notes interspersed. It is not always easy to distinguish between the whispering songs and sub-songs of those birds, such as the Blackbird (*Turdus merula*) and Robin, whose primary songs lack the stereotyped form so characteristic of such birds as the Chaffinch. It seems possible that sub-song may be the basic utterance from which primary song has evolved, and there is quite a strong similarity between the sub-songs of certain allied species, such as the Blackbird, Song Thrush, Robin and

Dunnock. Sub-song does not appear to be given nearly so readily as whispering song, but I have heard it in almost every month of the year.

Rehearsed Song: The random utterance of song-notes by young and sometimes old birds before they have attained perfection in the primary song. In the case of old birds this would cover the very imperfect versions of the primary song which can sometimes be heard in winter and spring (this does not include the full, primary songs uttered during the winter months by such birds as the Robin and the Song Thrush). In the case of young birds it would comprise the song notes poured out at random, often in a broken series, at any time before the pattern of the primary song has been found and "fixed."

There is something to be said for identifying these two sub-types of song by different names (e.g. "rehearsed song" in the case of old birds and "searching or exploratory song" in the case of young birds), but I am inclined to think that this multiplication of terms is unwarranted. Some writers (e.g. Morris, 1925) seem to refer to this type of song as "recording," but I feel that the term "rehearsed song" suggested by Morris (*ibid.*) is more accurately expressive. There appears to have been some confusion in the past as to just what is meant by the term "recording," and I suggest that this term should be abandoned.

Female Song: there seems no adequate reason why the singing of hen birds should not be referred to by this term.

Other songs used only occasionally or so infrequently as not to justify their inclusion in the category of primary song, however loud or quiet they may be, e.g. the special courtship songs given by some species.

I find that in my own notes I have tended to use the terms "low" "soft," and "quiet" indiscriminately in describing bird song when meaning in nearly every case quiet as opposed to loud. I have not corrected this in the records given above, as I wished to depart as little as possible from the adjectives used at the time. It would be as well, however, in order to describe bird-songs more accurately, to give to each of these terms its individual meaning as defined in, say, the *Concise Oxford Dictionary*:

low: not shrill or high; produced by slow vibrations.

soft: not strident or hard.

quiet: not loud.

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REVIEWS.

Mountain Birds. By R. A. H. Coombes. Plates by G. E. Lodge. (Penguin Books, King Penguin series, London, 1952). 4s. 6d.

Mountain Birds is written and illustrated with grasp and originality, but is only permitted by the King Penguin format to deal with sixteen species, each of which receives a page or two of text and a coloured plate in Mr. G. E. Lodge's vigorous and pleasing style. The production is excellent except that the tendency towards excess purple so prominent in many current colour reproductions spoils the effect of the Raven, Carrion Crow and Ring Ousel. Mr. Coombes knows his mountain birds well and his notes on their distribution are evidently based upon up-to-date information, but the spread of the Buzzard eastward in both Scotland and England is only vaguely mentioned. His use of the name "Moor Pipit" in place of Meadow Pipit is courageous, but it is questionable whether the new name more successfully describes its habitat over the greater part of the year, and whether such objections as may be raised against "Meadow Pipit" are sufficiently cogent to call for any change.

E.M.N.

VIth Bulletin of the International Committee for Bird Preservation. (Published by the I.C.B.P.) 12s. 6d.

International Committee for Bird Preservation; British Section: Annual Report for 1951. (Published 1952). 2s. 0d.

International Wildfowl Research Institute; Wildfowl Counts: 1947-52. (Published 1952). 2s. 0d. (All above obtainable c/o British Museum (Nat. Hist.), Cromwell Road, London, S.W.7.).

THE International Committee for Bird Preservation is one of the most economically and efficiently run of international organisations, and has succeeded better than most in cutting out high-sounding verbiage, concentrating on practical points and finding the right men (and above all, in the person of the International and British Section Secretary, Miss Phyllis Barclay-Smith, the right woman) to ensure their effective handling. The first part of the VIth Bulletin briefly summarises in English, French, German and Spanish the transactions of the I.C.B.P., and its various conferences and meetings during 1949-50. While much of the content of this first part of the Report represents business unfinished during the period covered, it records a range of progress which must in the circumstances of the time be regarded as promising. Perhaps the most unsatisfactory features are the failure to secure reports from various committees entrusted with the follow-up of special problems, and the disappointingly brief section on the International Wildfowl Research Institute, which is only partially redeemed by the other two publications now under notice.

The second half of the Bulletin contains reports of varying scope and merit from a number of national sections. Some of these give interesting glimpses of the extraordinary problems with which bird protection is now faced. In North America the 30 known survivors of the Whooping Crane winter in a part of Texas where oil drilling rights are being worked, and are only safeguarded by an arrangement under which the cranes have the use of the area until they migrate north to their undiscovered Canadian breeding grounds, when the oil men come in and operate until the birds' return. In an unspecified, but very recent, year, 4,320 Bald Eagles were killed in Alaska, 2 dollars bounty being paid on each head—a record reminiscent of the worst days of eagle slaughter in nineteenth-century Europe. On the other hand, in Japan, reserves have been designated for the special protection of (among other birds) Cormorants and Magpies conspecific with our own, and in Holland all birds of prey enjoy legal protection, although the Rook, Cormorant and others are denied it. In Hungary it is stated that in one district 10,264 Magpies were poisoned as "vermin" on 5,353 acres in 1948, and even more in 1949. In Iceland mink escaped from fur farms are increasing and have locally wiped out breeding ducks and waders despite a reward equivalent to

26s. a head for their destruction. The mink is regarded as a potentially serious menace to Icelandic bird-life, and consequently to our own winter population of ducks and other ground-nesting northern species. In Sweden the swans in the Oresund area have their own special bank account to pay for their winter feeding. Generally these reports give evidence of a strengthening of scientific as opposed to simply humanitarian attitudes towards bird protection, and a growing emphasis on safeguarding habitats.

The British Section's Annual Report contains accounts of meetings of the Conseil International de la Chasse and the International Union for the Protection of Nature, both of which overlap the I.C.B.P., although fortunately co-operation has been established in each case. The main part of the Report, however, and the whole of the third publication under notice are concerned with work on wildfowl populations. Apart from a nine-page paper by Dr. J. G. Harrison on *The Recent Status and Distribution of Wild Geese in North-west Germany* and some meagre information about the decline of Brent Geese in the Netherlands hopes of a comprehensive survey of the West European wild-fowl populations are still disappointed. Even for Britain the results so far disclosed are small in relation to the scale and duration of the effort, and apart from ringing, virtually nothing seems to be materialising on aspects other than wildfowl counting, on which Mr. G. Atkinson Willes has put in great efforts at completing the organisation of a large network of keen observers, and has begun a much-needed critical review of techniques, extent of cover and the treatment of data. There is however, clearly a long way to go before valid conclusions can be drawn, except in relation to the Brent Goose, the dark-breasted race of which appears to be reduced to a world population of the order of 10,000 birds, of which more than half winter between the Thames and the Wash.

E.M.N.

COUNTY BIRD REPORTS.

Cornwall Bird Watching and Preservation Society. Twenty-first Annual Report, 1951. Edited by B. H. Ryves, A. G. Parsons and H. M. Quick.

THIS report follows its usual make-up, with systematic notes split up over 3 sections; there are also separate tables of migrant dates for Cornwall and the Scillies. The following are included among the more interesting records from Cornwall. The Chough population does not appear to exceed 8 adults. Linnet incubating in September. Richard's Pipit identified by call in October; another recorded in April. Several Blue-headed Wagtails in spring; a female in September, notoriously difficult to identify, is recorded without comment, together with a male. A Waxwing was seen in December. Aquatic Warbler in October. Four or five Hoopoes in April and one in September. Several Rough-legged Buzzards. Osprey in October. Spoonbills wintering on the Tamar remained until March and were seen again from September to the end of the year. A Great White Heron on May 29th has already appeared in *British Birds*. Two or three Bitterns in January. Several Whooper and Bewick's Swans. A Bean Goose in February and March. Leach's Petrel in October. Red-necked Grebe in March. Grey Phalarope in January, February, November, and several in September. A Pectoral Sandpiper on May 31st and June 1st. Kentish Plover on May 31st. Avocets wintered on the Tamar until March and again in December. A Sooty Tern on July 31st. Sabine's Gull on July 22nd. Little Gulls in spring and autumn. Herring Gulls bred inland again. Iceland Gull in May. A Little Auk in December. Two pairs of Corncrakes bred. Two Spotted Crakes in September.

Between Cornwall and the Scillies 30-40 Storm Petrels congregated when cod-liver oil was thrown out astern on September 8th; Cory's Shearwaters were seen in August and September, and Sooty Shearwaters in September.

On the Scillies a Golden Oriole and Blue-headed Wagtail in spring. Red-breasted Flycatchers and Yellow-browed Warbler in autumn, 6-10 Firecrests on St. Mary's during winter. A well-authenticated Blue-cheeked Bee-eater on June 22nd has already been recorded in detail in *British Birds*. A Marsh

Harrier wintered, "this is now becoming a regular feature." Two Montagu's Harriers remained from early September to late November. Fulmar was proved to breed for the first time. Black-throated Diver, Pectoral Sandpipers and "a large flock" of Grey Phalaropes in autumn. Black-winged Stilt in January and February, hitherto apparently unrecorded in Britain in these months, is rare enough to deserve a few words of detail to confirm the bald statement of its presence. One or two pairs of Roseate Terns nested. Glaucous and Iceland Gulls were seen in spring.

This long list of rare and relatively rare birds indicates the fortunate position occupied by the county, and the strength of the Cornish Society with membership of 467 and reports from about 70 observers. The report, however, gives little indication of systematic observation, or of co-ordinated activity apart from sound-recording of Manx Shearwaters, Storm Petrels and Cormorants, the story of which is told in three pages of verse.

It is well to recall in connection with this and the other reviews of county reports that responsibility for correct identification of the birds recorded rests with the editor of the local report. The published details, often restricted by consideration of space, are generally insufficient to allow the reviewer (or any other reader) to form a considered judgment, which in any case depends in part on the capabilities of the observer. It is very desirable that the essential features on which an unusual or difficult identification depends should be published, as has frequently been done in this Cornish report; nevertheless our mention of a record does not imply our endorsement of it. P.A.D.H.

Report on Somerset Birds, 1951. Edited by W. R. Taylor *et al.*

WE note the following :—

A heavy midsummer concentration of Carrion Crows feeding on the mud banks of the Avon Gorge, reached 127 birds on July 6th. A juvenile Crossbill in July. Forty Snow Buntings in January. A Richard's or Tawny Pipit at Minehead on September 14th. A variant Yellow Wagtail in spring. Long-tailed Tits are now recovering from the 1947 winter. Several new areas in W. Somerset occupied by Pied Flycatcher. At least 15 singing Grasshopper Warblers in Leigh Woods. Marsh Warbler scarcer than ever in S. Somerset. Blackcap wintered. Stonechat has fully recovered in most areas from the hard weather of 1947. A Cuckoo was reared in a Swallow's nest. Perhaps 20 or more pairs of Nightjars in Leigh Woods. One or two Hoopoes in September. One Wryneck reported. Buzzard is continuing to expand and spreading north; 21 seen together. Several Bitterns in winter and one near Bristol in July. Thirty Bewick's Swans at Durlough reservoir in January. The largest flock of White-fronted Geese was about 600. It is now thought that Bridgwater Bay is an important moulting place for Sheld Duck; numbers began to build up in July, reached 3,000 or more in October, and dispersed in November and December. Breeding of Pintail is recorded for the first time. Fulmars in April and June at Steep Holm indicate an expansion to upper reaches of the Bristol Channel. Several Slavonian Grebes, including a juvenile in August. Up to 68 Black-tailed Godwits in August. Curlew increasing its breeding range in central Somerset. A few Common Sandpipers, Green Sandpipers, and a Greenshank wintered. Two Spotted Redshank were seen in April. Golden Plover of the northern form were seen in spring, and in autumn as early as July 17th. Forty occupied nests on Steep Holm show the Great Black-backed Gull is still increasing. A Glaucous Gull was seen in winter, and an Iceland Gull in spring. There are several summer reports of Corncrakes, including one of breeding. Coot totalled 2,100 at Cheddar reservoir in December. Black Grouse are described as common enough in the Quantocks, but varying greatly in numbers from year to year. Two very late migrants were a Yellow Wagtail and a Pied Flycatcher, both at Brean Down on October 28th.

The report consists of classified notes arranged under each species according

to the district, within the county, in which the observation was made. The districts themselves are clearly shown on a map. In a few cases of unusual birds, the notes are amplified by description ; in some cases the editors record that satisfactory details have been received. Duck counts figure quite prominently.

P.A.D.H.

Cardiff Naturalists' Society's Reports : Ornithological Notes for Monmouth and Glamorgan, 1947-48 and 1948-50. Edited by G. C. S. Ingram and H. M. Salmon.

1947-48 : In Glamorgan a Woodchat was recorded for the first time (*vide, antea*, vol. xl., p. 275) at Swansea on May 22nd, 1947. As in other county reports, there is a note of steady increase of the Nuthatch as a breeding species. A cock Black Redstart frequented buildings in the centre of Cardiff in June and July, but apparently had no mate. Hoopoes were seen three times in the spring and summer of 1947 and 1948. Among many interesting records of duck is one of 14 Eiders in the Burry estuary on March 2nd, 1947. In the hard frost of January and February, 1947, 3 dead Slavonian Grebes were picked up at Llanishen Reservoirs.

1948-50 : A pair of Pied Flycatchers reared a brood in 1950 at Peterstone-super-Ely, the first breeding record for Glamorgan. In September 1949, a Spoonbill was seen in the Burry estuary, the first definite record for the county. A pair of Pochard reared a brood of 7 in the Margam area in 1950 ; this also is the first breeding record for the county. An early pair of Great Crested Grebes was seen at Hensol on April 15th, 1950, with 2 young apparently at least 10 days old. A Long-tailed Duck remained at Llanishen reservoir from November 13th, 1949, to April 7th, 1950. Ten Eiders were seen in the Burry estuary on April 10th, 1950 ; a rather vague report of the presence of Eiders there in every month of the year would have been improved by detailed records and obviously merits more careful investigation.

In February, 1950, the "wreck" of Little Auks brought a number of birds to many localities in Glamorgan.

A note of the proportion of brown-headed Smews to adult drakes between 1921 and 1950 at two inland waters in Glamorgan shows that, of 322 birds seen, 90.58% were brown-headed. This figure confirms an estimate made by Millais and is at variance with *The Handbook* which suggests that this figure is far too high and "certainly so for many inland waters."

A.W.B.

The Sussex Bird Report, 1951. Edited by G. des Forges and D. D. Harber.

THIS carefully edited report consists in the main of 15 pages of classified notes based on the records received from 69 observers. Apart from these, however, and an Editorial on rare birds, there is a brief account by Mr. John Reynolds, the regional organizer, of the 1950-51 wildfowl counts in Sussex. Then, at the end of the Report, three pages are devoted to an important criticism of certain records published in *A History of Sussex Birds* (J. Walpole-Bond) and in *The Birds of Eastbourne* (E. C. Arnold). The Editors of *The Sussex Bird Report* have been able to study the diaries of the late Robert Morriss, various of whose records were included in these two works, and, as a result, it is obvious that there must be a revision of accepted idcas (where based on Morriss) about the former occurrence in Sussex of Raven, Rock Pipit and Shag, and that some of his records referring, among other species, to Richard's and Tawny Pipits, Lesser Grey Shrike, Aquatic Warbler, White-tailed Eagle, Little Ringed Plover, Iceland Gull and Pomarine and Long-tailed Skuas must be regarded as unsubstantiated. The Editors state their intention of examining other, similar material that has never been critically studied and they are to be congratulated on undertaking such work. In many county histories there have appeared in print over-eagerly accepted sight-records of rarities and it is to be hoped that others will follow the lead of

Messrs. des Forges and Harber by reviewing sources that have, like these diaries, been too readily quoted.

The classified notes contain a number of interesting records, but one criticism that also applies to some other counties must be repeated. It is extremely confusing and much to be regretted that there is still a partial overlap between this report and *The Hastings and East Sussex Naturalist*, some records appearing in both, while others that are published in the latter are not to be found in the county one. An arrangement to avoid such a situation would be most welcome.

The Editors of this report have previously clearly defined their policy of publishing only the unusual, but in the reviewer's opinion it would be more satisfactory to those who do not know the county if, as is the case with a few local reports, brief accounts of the status of the more common species could be included. These would not necessarily have to be repeated annually, but in most counties it would enhance the value of the report concerned to those unfamiliar with the area and unable to afford expensive, and sometimes out-of-date, county histories. Also, on the present system one cannot be certain in borderline cases whether a species is omitted on account of a total lack of records or because it is not rare enough to merit inclusion.

The unusual records include the following. Very few Bramblings except for a flock of 50 in early January that had first been seen in early December. A Water Pipit at the Cuckmere, first seen in December, 1950, remained until March 4th. Two Blue-headed Wagtails on April 28th and a variant of the "Sykes's" type in August. Rather late Spotted Flycatcher on October 3rd. Two Firecrests end of March or early April. Late Reed Warbler on October 13th and 2 Sedge Warblers on October 4th. Dartford Warblers seen in two localities. Late Whinchat on October 31st. Further improvement in breeding status of Stonechat. Black Redstarts in 5 or 6 territories in Hastings and St. Leonards in breeding-season, but nesting only proved at Fairlight (details of a 1950 nest are added elsewhere in the Report). One Hoopoe in May. Only 1 record of Wryneck. At least 6 pairs of Peregrines, some of which raised young. Hobbies bred successfully in 2 localities. Marsh Harriers in August and November. Ospreys in May, August and October. An immature Spoonbill, perhaps the same, in 3 localities in first 6 months of the year; another in July. Bewick's Swans in January and February. Various records of Greylag, White-fronted and Bean Geese, and rather more of Brent than in recent years. Gadwall in September. Drake Wigeon on Pett Level from May to end of year (although it is not stated how this was distinguished from other Wigeon in the winter months (!) and it is in fact recorded in the Hastings report as seen only until August 25th). Large numbers of Pintail January-April and in December, maximum 176 on April 1st. Two Long-tailed Ducks in March. Eiders in May, November and December. Gannet again in all months except February and March. Manx Shearwater in January. Fifteen records of Fulmar, April-June, perhaps only 1 individual. Red-necked Grebes in October and November, and various records of Slavonian and Black-necked. Black-throated Divers in January and March, and 3 records of Great Northern. About 200 Turtle Doves in a loose flock in July. Greatest numbers of Black-tailed Godwit were over 400 at Thorney in August, and about 350 there at end September. Late Jack Snipe on May 12th. Five records of Grey Phalarope, September-December. Temminck's Stint in August. Spotted Redshanks in April and July-October, largest number 5. Six pairs of Little Ringed Plover nested at 2 sites. Avocet on December 20th. Roseate Tern on July 16th. Little Gulls in February, May, October, November and December. Iceland Gulls on March 25th and June 28th. Little Auk in January. Spotted Crake picked up dead on October 18th. Other records that have already been published in *British Birds* include: Short-toed Lark, Great Reed Warbler, Balearic Shearwater, Terek Sandpiper, Marsh Sandpiper, Gull-billed Tern and Sabine's and Bonaparte's Gulls (all vol. xlv). Additions to the 1950 report published in this one include Dotterel, Avocet and Pomarine Skua, all in May. I. J. F. - L.

The Hastings and East Sussex Naturalist for 1951. Recorder for birds—
N. F. Ticehurst.

This publication includes 14 pages devoted to birds, almost entirely in the form of classified notes with a brief introduction. One would suppose that the records are all from the eastern corner of Sussex and, for the first time, do not include any from Kent in view of the statement that "the formation of the Kent Ornithological Society has relieved us from publishing records from the Dungeness and Romney Marsh areas," but several Kentish occurrences have crept in. Incidentally, no Kent report for 1951 has yet appeared. As discussed above, there is a tiresome, partial overlap between this list and *The Sussex Bird Report*, just as there used to be with the Kent section of *The South-eastern Bird Report*. The following items are among those which do not appear in the county report.

The increase of the Carrion Crow during the last 20 years is discussed in some detail, and several instances are given of the interesting nesting-sites used by this species in the marsh and shingle areas; for the most part these are poles of one form or another, but others include a gun-mounting and the space between two chimney-pots on a derelict house. A pair of Golden Orioles was seen near Lydd, Kent, in May. A Tawny Pipit at Wicks, Kent, on September 1st presumably did not wander over the county boundary there, as it was recorded by one of the Editors of *The Sussex Bird Report*, but only in the present list. Water Pipit in April. Blue-headed Wagtails in April and September. The report of a Collared Flycatcher in May was submitted to *British Birds* and rejected. Aquatic Warbler in September has already been mentioned in *British Birds*. House Martins up to December 4th, Hoopoe in May, 1949. Eiders in January and December. Fulmar in June. Red-necked Grebes in November, and various records of Slavonian and Black-necked. One record of Spotted Redshank (this species is much less frequently recorded in the eastern part of Sussex). A Ringed Plover at the Rother mouth on August 16th is noted in *The Sussex Bird Report* as "probably" of the Arctic race, but in the present list this qualifying word is omitted. Kentish Plover in March and August. Avocet in May. Several fresh feathers from the back of a Little Bustard were picked up in August, but for some reason the record is enclosed in square brackets. I. J. F.-L.

Suffolk Bird Report for 1951: Supplement to vol. vii, part iii of *Transactions of the Suffolk Naturalists' Society*. Edited by P. R. Westall.

Lowestoft Field Club: *Sixth Annual Report* (1951).

Great Yarmouth Naturalists' Society: *Annual Report*, 1951.

Wild Bird Protection in Norfolk, 1951: *Report of the Council of the Norfolk Naturalists' Trust*.

THERE is overlapping of area between the first and second of these Reports and between both of them and the third, which also overlaps with the fourth. The second contains the welcome statement that "Members' observations were included in the first *Suffolk Bird Report* . . . and this will be done again for 1951." This commonsense attitude is unfortunately not always shared by local societies covering parts of counties in which there is a well-edited county report, although we are glad to see that some interesting notes from the Great Yarmouth Report also appear in those for Norfolk or Suffolk, according to location. It would be helpful to users if Editors of Reports affected by this problem of overlapping would state clearly what policy has been adopted over it. What was evidently a single Crane, recognisable by a leg injury, appears in all four Reports, being first noted four days earlier on the Suffolk side than in Norfolk where the Report suggests (in notes from Horsey) that it probably died in mid-July, whereas the Great Yarmouth Report traces it up to early August at another Norfolk site. While the Suffolk Report notes that on grounds of economy a number of notes cannot be printed, with rising publication costs this duplication must tend to restrict the appearance of records which ought to be available. There are also two

well-produced and informative publications on the Suffolk Reserves of the Royal Society for the Protection of Birds at Minsmere and Havergate which were issued during 1952 at 1s. 6d. each, and contain detailed bird lists which were at the disposal of the Suffolk Report.

This Suffolk Report gives the present status in the county of over 200 species. Among these the Goldfinch and Woodlark are noted as increasing and the Corn Bunting as apparently extending its range, while the Yellow Wagtail has locally decreased. A few breeding records of Crossbills have been received both from Breckland and E. Suffolk and there are two breeding records of Wrynecks, near Ipswich. The number of breeding pairs of Bearded Tits reported was about 20-25 in Suffolk where numbers were lower than in 1950, and apparently about half this number in Norfolk (where there were two pairs at Cley) although the account of these is far from clear as regards second broods. Except for one brood of each at Hickling neither young Marsh Harriers nor young Montagu's were recorded as reared in either county, although a pair of Montagu's may also have bred in East Suffolk—a most disappointing setback. The record of Short-eared Owls was equally poor, and Bitterns also seem to have been rather below normal.

Of other characteristic East Anglian species Sandwich Terns established a Suffolk colony at Havergate, where about 30 pairs bred, but although as many as 430 nests were counted on Scroby Sands off Yarmouth all these and nests of other species were destroyed by a high tide on June 24th-25th; there were only 29 nests at Blakeney and only a single pair nested successfully at Scolt Head. Two pairs of Arctic Terns also nested at Blakeney. Against such figures the Avocet now ranks as almost the most numerous and flourishing of the group of rare East Anglian birds, at least 24 pairs having bred at Havergate, thanks to efficient R.S.P.B. protection, and about 35-40 chicks (according to the Suffolk Report; the R.S.P.B. say at least 32) having reached the free-flying stage.

E.M.N.

Cambridge Bird Club Report. 1951. Edited by A. E. Vine.

THIS carefully edited Report contains 16 pages of notes drawn from an area which unfortunately overlaps several others and which is vaguely defined and fluctuating, although illustrated by a useful map. The introduction indicates that much interesting and systematic work is being done, only part of which is covered in the Report.

Rooks are recorded as increasing and a census in S. Cambs. confirms this. Further details are given of Rook and Starling roosts, one of the latter at Quay being estimated at 150,000 birds. A pair of Siskins with four young seen in July are rightly square-bracketed; they may possibly have escaped or been released from captivity. A Bearded Tit heard and seen near King's Lynn in January indicates movement, and there are records of Dippers in both Norfolk and Suffolk, and also of Wrynecks in pairs. Short-eared Owls nested in small numbers, but Marsh Harriers and Montagu's Harriers apparently did not. The maximum number of Brent Geese in the Wash was about 1,200. Sheld Ducks are apparently increasing and spreading inland, and have nested at Peterborough Sewage Farm for some years. The first confirmed breeding record for Pintail in Cambridgeshire is given and breeding is thought to have occurred also in S. Lincolnshire; Wigeon also are suspected of attempting to breed. Several records of breeding Curlew lack confirmation and fuller investigation of the present status seems desirable. It is roughly estimated that some 250 pairs of Redshank now breed inland in the area. Quail records are few.

E.M.N.

Huntingdonshire Fauna and Flora Society, 4th Annual Report, 1951. Birds, edited by C. F. Tebbutt.

HUNTINGDONSHIRE is a small county with no coastline, but even so the list of birds revealed in the 7-page section dealing with them is disappointingly

meagre. It is even noted that in 1951 there was not a single record of Redshank in the county. A Great Skua caught alive in October having possibly hit overhead wires was sent to the London Zoo. Rooks and Lapwings are noted as apparently increasing, and Great Crested Grebes and Kingfishers as apparently approaching peak numbers.

E.M.N.

The Bedfordshire Naturalist for 1951. Recorder for birds—H. A. S. Key.

ABOUT eight pages of this well-planned and very full publication are devoted to birds. These are mainly in the form of classified notes based on the records of some 16 observers, but are followed by an account of the first attempt at breeding in the county of the Little Ringed Plover (with a photograph of the nest and eggs), and full details of the Bedfordshire counts of Heron and Great Crested Grebe in 1951. The Little Ringed Plovers' eggs unfortunately disappeared on the night of June 20th-21st and the adults were not seen again after the 25th. The most remarkable occurrence of the year was that of a bird identified from the description of the observer as an immature White-tailed Eagle. This was seen on May 1st at Biddenham gliding along the poultry pens behind some houses; it then swooped at the observer (when she threw a clod of earth at it) with "harsh and rasping" cries, before turning away and flying off. The evidence given is convincing.

An abnormally large Starling roost developed in a thorn thicket at Elstow during November, but began to break up after a fortnight; at the peak the numbers were estimated at "not less than a quarter of a million birds." Small flocks of Crossbills were seen at the end of the year at Whipsnade. Late Yellow Wagtails on October 7th and 13th. A White Wagtail in April is supported only by the statement "all characters noted." Red-backed Shrikes reported from 5 areas, 2 broods of young being reared successfully. Pied Flycatchers in May. An unidentified leaf-warbler in December. A somewhat early (August 25th) flock of Fieldfares is included without any details, without even the name of the observer; there is an unfortunate tendency in some reports for such records of this species to be readily accepted, although there have been many cases where a critical examination has shown the birds concerned to be juvenile Mistle Thrushes. A large roost of Swallows and Sand Martins in reed-mace at Willington in August (most of the site has since been bull-dozed away). Ten late Swifts on October 17th. A pair of Hobbies seen from mid-May onwards, but breeding not proved. A bird "believed to be" a Honey Buzzard is very rightly enclosed in square brackets. Bitterns in January and August. Sixteen Bewick's Swans in March. Two Sheld Ducks in April. Tufted Duck nested at Felmersham gravel pits. An exhausted Gannet found in September was ringed and released in Norfolk a few days later. Flock of about 100 Turtle Doves in July. Up to 9 Jack Snipe at Bedford Sewage Farm. Spotted Redshank and Greenshank in May, dead Kittiwake in March, Corncrake in August and Quail in October are among the other records included. It should particularly be mentioned that this is one of the very few reports that adopts the excellent policy of including mention of *all* the species occurring in the county.

I. J. F.-L.

Lincolnshire Naturalists' Union Transactions (for 1951), vol. xiii, No. 1. (published December, 1952). Ornithology, edited by S. A. Cox.

ONLY 14 pages of notes are given from 25 observers, from among whom several of the best-known and most active Lincolnshire ornithologists are missing, although they are members of the Union. The result cannot be said to do justice to the ornithology of this important county. For example there are single references only to such species as Blackcap, Garden Warbler, Sedge Warbler and Nightingale, while for Lincolnshire breeding records of

Short-eared Owl in 1951 it is necessary to turn to the *Cambridge Bird Club Report*. A description of a bird identified as Richard's Pipit is confined to "It permitted sustained observation and was like a Lark, but uncrested, with long legs and unstreaked flanks." This is a disappointing outcome of sustained observation, to say the least.

Among interesting records is the laying of what is claimed to be the first recorded clutch of eggs of Montagu's Harrier in the county, unfortunately lost through flooding. A Honey Buzzard was most regrettably trapped by a gamekeeper near Brigg in July, and a Buzzard was seen in late May. The Bittern again bred, and eggs were found at the Black-headed gullery at Twigmoor which had been regarded as deserted. E.M.N.

Yorkshire Naturalists' Union, Ornithological Report for 1951. Edited by R. Chislett.

THE large number of recorders that contributed to this report is evidence of the vitality of the Union. The observatory and trapping station at Spurn and traps at High Royd and Wharfedale have continued to add materially to a knowledge of Yorkshire birds and the numerous records of recoveries of ringed birds are evidence of the important part these traps play in the study of migration. The most interesting of these have already been recorded in *British Birds*.

The most important record of the year was that of the nesting of the Temminck's Stint. A nest and four eggs were found in July, but on July 12th the bird was picked up dead near the eggs which proved to be highly incubated. This is the first known attempt at nesting by the species in England. A remarkable record was that of 2 Nutcrackers seen on a chimney-pot in Leeds on April 27th (*cf. antea*, vol. xlv, p. 68). Black Redstarts reared a brood at Helmsley and probably nested elsewhere, for they were seen on blitzed buildings in Hull until mid-July. Montagu's Harriers were thought to have bred and were present throughout spring and summer.

Among the large number of interesting records the following may be quoted: at least 11 Great Grey Shrikes were seen in five different months; an Icterine Warbler was trapped at Spurn on September 3rd; a flock of about 100 Fieldfares was still in Wharfedale on May 25th; during a great influx of Robins in October, 600 were trapped in a week at Spurn, and some of them were subsequently recovered in the Mediterranean area; a Bluethroat and Wrynecks were caught and ringed; Spoonbills, birds rarely seen in Yorkshire, were noted in April, May and July; at Winterset a pair of Green-winged Teal and a drake Ferruginous duck were seen in March; a Pectoral Sandpiper arrived in September (*antea*, vol. xlv, p. 294); 7 breeding pairs of Little Ringed Plover were watched and five nests with young or eggs were found; more Corn-crakes nested than for some years. A.W.B.

LETTER.

ULTRA-QUIET SONG.

To the Editors of BRITISH BIRDS.

SIRS.—I am trying to collect information about ultra-quiet bird song (sub-song, etc.) and I should be grateful if you would allow me to appeal through the medium of *British Birds* for any help that other observers can give me. As records on this subject are apt to be rather long, I should be most grateful if anyone having notes on very quiet song would, in the first place, be kind enough to send me a short epitome of them so that I may later ask for a fuller record of any particular entry if this should be necessary. 40, Nork Way, Banstead, Surrey. M. D. LISTER.

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BRITISH BIRDS

NUMBER 5, VOL. XLVI, MAY, 1953.

THE COLLARED TURTLE DOVE IN EUROPE.

BY

JAMES FISHER.

(Plate 26).

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INTRODUCTION.

A poor maid was servant to a very hard-hearted lady, who gave her as wages no more than eighteen pieces a year. The maid prayed to the Gods that she would like it to be made known to the world how miserably she was paid by her mistress. Thereupon Zeus created this Dove, which proclaims an audible deca-octo to all the world to this very day.

It was this legend, here written as recounted by C. Hinke to J. Fr. Naumann (1837), that led the Hungarian naturalist Frivaldszky (1838) to name the Collared Turtle Dove *Columba risoria*, var. *decaocto* (now *Streptopelia decaocto*). He was sent the type specimen in 1834 by Hinke from Philippopolis (Plovdiv), which was then in Turkey-in-Europe, but is now in Bulgaria*.

* Owing to the obscurity of the journal in which Frivaldszky published his original description of the dove, there have been rather frequent errors in the literature. 'Frivaldszky' has often been spelt 'Frivalszky', and given various initials, G., E and I. His name, in Hungarian style was Frivaldszky Imre, which has been Germanised as Imre or Emerich von Frivaldszky. The most readily available version of his original paper is the German translation of Reiser (1894, p. 142).

Several authorities, including Peters (1937, p. 92) wrongly give "Turkey" as the type-locality of the species.

The many observers in Europe who have now heard the voice of *S. decaocto* must agree that Zeus did not do his job very well, at least as regards the Collared Turtle Dove's voice. But as official herald of the domestic servants' union the bird certainly seems intent on reaching the world, for in the course of the last twenty years it has spread about 1,200 miles north-westerly across Europe from the Balkans, and has been observed at 468 different new places at least, at many of which it has become a resident breeder within a year or two of its first arrival. The observation of what may have been the first one in Britain has been described by May and Fisher (1953). This paper describes the distribution of the species, and traces, in as much detail as the writer has found possible to collect, its spread across Europe. It has been a colonisation more spectacular than that of any other known land-bird, and has been even more rapid (in distance covered at least) than the spread of the Fulmar (*Fulmarus glacialis*), the sea-bird which has extended its breeding-range in the linear sense 2,319 miles in less than 200 years (Fisher 1952, p. 249).

THE SUPERSPECIES.

The genus *Streptopelia* is a large genus of doves; Peters (1937) holds to 16 species, one of which is known only from one single juvenile specimen and thus is doubtful. All but one of the remaining 15 species have several valid geographical subspecies; some have as many as 8 or 9 recognized races, and the whole genus contains no less than 78 described forms. Some of the species have obvious affinities, and one group in particular of 4 allopatric (non-overlapping) species could be united, as von Boetticher (1950) has tentatively suggested, in one *Artenkreis* or superspecies.

The first-described of this group is *S. bitorquata* (Temminck, 1810), of which the typical race is the "Double-ringed Turtle Dove" of Java and the Lesser Sunda Islands east to Timor. *S. b. dussumieri* (Temminck, 1823), the "Philippine Turtle Dove" is the other accepted race of this species; it inhabits northern Borneo, the Sulu Archipelago, Palawan, the Philippines and the Marianas; in these last it was introduced. The second species is *S. decaocto* itself (Frivaldszky, 1838), of which several subspecies have been described and two, *S. d. stoliczkae* (Hume, 1874) and *S. d. xanthocyclus* (Newman, 1906), are generally accepted. The third, African, is *S. roseogrisea* (Sundevall, 1857) of which the typical race extends from Lake Chad through Darfur and the central Sudan east to western Abyssinia. The two other forms of this, the "Pink-headed Dove" or "Rose-grey Dove" are *S. r. bornuensis* (Bannerman, 1931) which extends west from Chad as far as Timbuktu, and *S. r. arabica* (Neumann, 1904) which inhabits Arabia from Jidda to Aden, Eritrea and northern Somaliland. The fourth species, also African, is the White-winged Dove, *S. reichenowi* (Erlanger, 1901) which is only known from the Juba River in southern Somaliland

and from its southern Abyssinian tributary, the Dawa. In the latest standard work on East African birds (Mackworth-Praed and Grant, 1952) *S. roseogrisea* is regarded as conspecific with *S. decaocto*.

THE BARBARY DOVE.

This small, pale form of a *Streptopelia* species appears to exist only in domesticity. It was first described by Linnæus in 1758 as *Columba risoria*. It is often known as the "Collared Dove" and its superficial similarity to *S. decaocto* in the field has led to confusion, though the distinguishing characteristics are clear (apart from voice, size and colour, the distribution of black on the rectrices is quite different, and the blackish primaries of *S. decaocto* are diagnostic and a good field-character). The origin of *Streptopelia risoria* is not certain. Authorities such as I. Geoffroy Saint-Hilaire * (1860, 1861, quoted Oustalet) and Oustalet (1901)—favouring *decaocto* and others like Shelley (1883) and Hartert (1916) *roseogrisea*; but it is probably derived from *S. roseogrisea*, brought across to Italy and other countries of Europe from the Sudan via Egypt as a domestic house-bird in the second half of the sixteenth century (see e.g. U. Aldrovandi, 1599; Adametz and Stresemann, 1948). Schwenckfeld (1603) records it as imported to Silesia at 2 guilders a pair. In Italy particularly, but also in other parts of Europe including south England, Barbary Doves have established themselves in gardens and parks in a semi-domestic, semi-wild state. A. E. Brehm, the Italian edition (1898) of whose *Leben der Vogel* (first published in 1861) is quoted by E. Moltoni (1950b), writes of a great number at liberty in the gardens of the Castle of Miramar, near Trieste; and F. Arnold (1897) mentions some "lachtauben" on the islands in Lago Maggiore which from his description are clearly Barbaries. Already by 1792 or 1793 semi-albino *S. risoria* had been introduced by the Dutch into Bouton isle in the Tonga group, Pacific Ocean (Oustalet, 1901) which led to the belief, entertained for some time, that the "species" originated in the Pacific.

Taka-Tsukasa and Hachisuka (1925) record that albino *risoria* were introduced by the Chinese into the Pescadores Islands, off the western coast of Formosa, and have become quite common in the feral state, no coloured forms occurring.

HYBRIDS.

Considering that intergeneric crosses can be readily obtained among the Columbidae even between members of different sub-families such as *Zenaidura* x *Streptopelia* and *Columba* x *Streptopelia*, it is not surprising that ready hybridisation between different

* I. Geoffroy Saint-Hilaire thought that the turtle dove kept as a table bird by the ancient Romans was *S. risoria*, and that it was therefore most likely to be of Asiatic (thus *decaocto*) origin. But the Romans' birds did not breed in captivity, and were most likely ordinary Turtle Doves (*S. turtur*).

Streptopelia species occurs in captivity. Taibell (1930, 1931) shows that such hybrids are in most respects intermediate in character between their parents ; but *S. decaocto* when mated with *S. turtur* or *S. senegalensis* produces offspring with the *turtur* or *senegalensis* neck-pattern, not the black half-collar, and without the blackish narrow rectrical web. This, if a general rule, may prove important to field-naturalists, for the spreading *S. decaocto* in Europe may sometimes hybridize with wild or semi-wild species that it encounters. Bodenstein (1946b), for instance, records a bird from Ingelheim, Germany, that was "without doubt (*zweifellos*) a wild hybrid between *S. turtur* and *S. decaocto*."

Poulsen (1950) described one of the first Danish *decaocto* as a female that mated with one of a group of *S. risoria* (he uses *roseo-grisea*) at liberty in a garden at Holstebro, Jutland ; this pair was captured and later two hybrids were hatched. Such hybrids (naturally) have the black half-collar, but are smaller and paler than *decaocto*, and lack the full extent of black on the narrow web of the rectrices.

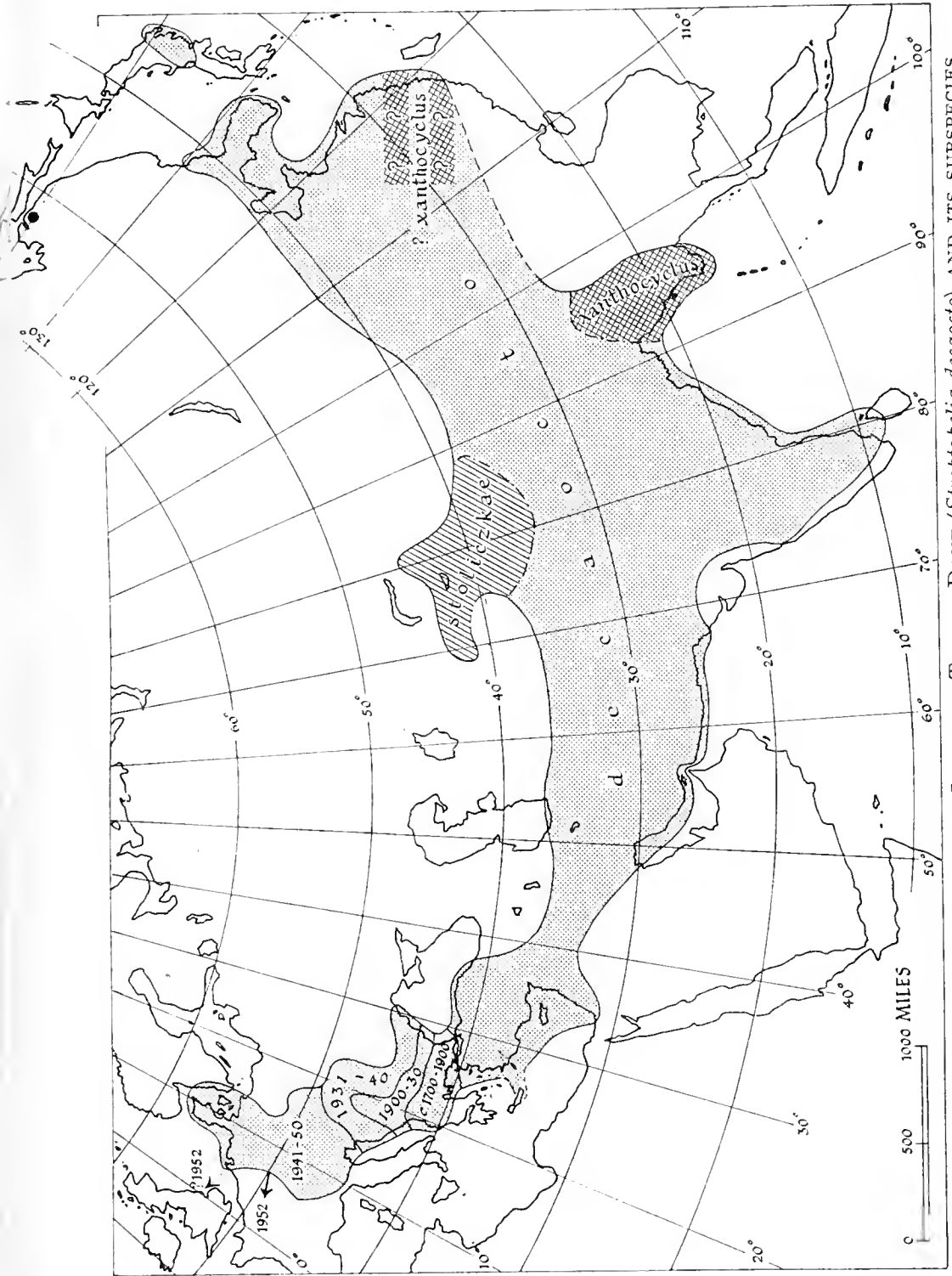
* * *

Streptopelia decaocto: ITS PAST AND PRESENT DISTRIBUTION.

The present world distribution of the Collared Turtle Dove is indicated in Map I which is compiled from all available recent authorities, and to which only notes on certain areas are perhaps necessary.

Japan. (von Siebold in Adametz and Stresemann ; Austin in Stresemann, 1950 ; Jahn ; Taka-Tsukasa and Hachisuka ; Udagawa). The Collared Turtle Dove is an introduced species present in the main island Honshu only ; it was brought from China in the eighteenth or early nineteenth century, certainly by 1830. It apparently became plentiful in the Kwanto area round Tokio by 1875, but was much reduced by shooting before 1900. By 1925 it was known only from Saitana and Chiba, the Imperial game reserves near Tokio, though previously it had been obtained as far west as Kyoto. A further twenty-five years of hunting, with war and occupation, placed it in danger of extermination, and it may now actually be extinct (Udagawa). It is, or was, an absolute resident breeding from April to July.

Korea and China. (Lönnerberg ; Meise ; Reichenow ; Riley ; Roonwal ; Shaw, 1936, 1938 ; Stresemann, Meise, and Schönwetter ; Taka-Tsukasa and Hachisuka ; la Touche). The Collared Turtle Dove is not rare in Korea, where it has been (insufficiently) separated as *S. d. koreensis* Buturlin, 1934 ; this represents its northerly limit in eastern Asia, apart from one isolated and clearly casual record from Mariinsk on the Amur River in 1855 (Tachanovskiy, 1893, quoted by Meklenburtsev, 1951) which is the only one from the far eastern U.S.S.R. In China the distribution runs north to Jehol, Peking,



MAP I: WORLD DISTRIBUTION OF THE COLLARED TURTLE DOVE (*Streptopelia decaocto*) AND ITS SUBSPECIES. The species is almost everywhere resident, though in India there are winter movements from the higher mountain regions and to the coast. The isolated (casual) record in eastern Russia is from Mariinsk on the River Amur.

Paotow on the northern loop of the Hwang-Ho, and Kan-chow in Kansu, on the northern side of the Nan Shan. In this range all birds are of the *decaocto* race, but in south China they tend towards the Burmese *xanthocyclus* in form, but have not been fully worked out. Save that the species is found in the lower reaches of the Yang-tze-kiang and in Fukien, its southern limit in China appears to be unknown. It is not found in Yunnan, Indo-China or Siam.

Burma, (Newman; Peters; Roonwal). The Burmese race *S. d. xanthocyclus* (Newman, 1906) extends south to Pegu, north-east to the Shan States and Bhamo, and north-west beyond Arakan and the Chindwin to Chittagong in Pakistan and Manipur in Assam. Beyond, from Cachar in Assam and East Bengal westwards, the race is once more *decaocto*, and the population the great one of India.

India and Ceylon. (Ali in Stresemann, 1950; Blanford; Christison; Hellmayr; Hutson; Meinertzhagen, 1920, 1927; Osmaston; Richmond, 1896; Roonwal; Ticehurst, 1923; Wait; Whistler, 1922, 1925, 1926, 1930, 1949). This heartland of *Streptopelia decaocto* contains the typical race *decaocto*. It lives in practically all cultivated country, leaving some high-mountain areas in winter, but otherwise behaving as a dispersive resident. It is absent as a breeder otherwise only from some parts of the west coast (see Map 1) including Cutch and Kathiawar to which it is, however, a winter-visitor; and it is only found at the northern end of Ceylon. It reaches far and high into the Himalayas and even the Karakoram, in Nepal, Kangra, Lahul, Ladakh and Kashmir. West and north-west through Pakistan it extends beyond Sind and Baluchistan and the North-west Frontier Province into Afghanistan.

Turkestan. (Gladkov; Hellmayr; Hume; Ludlow and Kinnear; Meklenburtsev; Richmond, 1896b; Roonwal). The large pale well-marked race of Turkestan, *S. d. stoliczkae* (Hume, 1874) occupies the cultivated parts of this great upland plain (where it is the commonest dove), mostly in Chinese Turkestan and Sinkiang, but extending over the border into Russian Turkestan; reaching from Kashgar, where it was first collected by F. Stoliczka, south to Yarkand and Sanju, east to the Cherchen Darya, north to Uchturfan and Aksu and over the border to Alma Ata and Jarkent, and west as far into the U.S.S.R. as Frunze, Chimkent and Tashkent.

Afghanistan, Persia and Iraq. (Adametz and Stresemann; Arndt; Hartley; Meinertzhagen, 1924, 1938; Meklenburtsev; Paludan; Roonwal; Sarudny; Serebrovskiy). *Streptopelia decaocto zarudnyi* Serebrovskiy, 1928 of Seistan, Persia has been insufficiently separated, and the Collared Turtle Doves of this area are *S. d. decaocto*. They extend through the cultivated parts of Afghanistan from Kabul and Jalalabad westwards, and just over the border of the Turkmenskaya S.S.R. at Kushka and Tahkta Bazar. In Persia they have been observed from Husseinabad (Seistan) in the

east, possibly to Gilan in the north, and certainly in Isfahan and Sanjar in the south-west; over the Iraq border they are recorded in the plain from Baghdad, Ramadi, Khanagin and Mosul.

Asia Minor and the Balkans. The researches of Adametz and Stresemann (1948) and Stresemann (1950) have shown that it is unlikely that the Collared Turtle Dove had spread west to the Levant before the sixteenth century, though a dove referred to as *warashan* or *warschân* in the Persian and Arabic literature of the tenth century may indicate, though it does not prove, that the species then inhabited Persia. One particular mention of the *warashan* is in a work of A.D. 968-77 by Abu Mansur Muwaffak ben Ali Harawi (Arndt, 1925). Unfortunately this dove does not appear to have been figured.

Between 1546 and 1549 Pierre Belon du Mans, tutor to Prince Henry, the heir to Francis I of France, travelled widely in the Levant and the Balkans, staying in Philippopolis, Constantinople, Damascus, Antioch and several other towns. Although the title of his book (1553) indicates that he was interested in *choses memorables* (and indeed, his book was full of them) this unusually accurate naturalist nowhere mentions anything which could be recognised as the Collared Turtle Dove. Neither did the wise teacher Pierre Gilles, another of Henry's tutors. Nevertheless, Stresemann (1950) is satisfied that *Streptopelia decaocto* was, by 1547, already one of the birds of the town of Constantinople. It appears that the newly appointed French ambassador to the court of Suleiman the Magnificent, Sultan of Turkey, a Monsieur d'Aramont, procured in Constantinople as a present for Henry, turtle doves of a rare and unique kind. They reached him among the Sultan's other gifts for his coronation. Stresemann, who quotes this from the accounts of Conrad Gesner (1555) and Ulisse Aldrovandi (1599) is certain that this refers to the Collared Turtle Dove.

It is not possible to trace with any historical accuracy the build-up of the populations of the Collared Turtle Dove in the Levant, Turkey and the South Balkans between 1547 and the start of the great spread of the twentieth century. Our detailed knowledge of the bird's present distribution in this region comes largely from modern papers and there is no suggestion in these that the Collared Turtle Doves were recent arrivals in the places where they were observed. In the Levant, the Collared Turtle Dove is found as far south as Gaza in Palestine and Amman in Transjordan. Other places are Ramleh, the Jordan valley, Jerash (Gilead), Nazareth (Tabor), Haifa, Beirut in the Lebanon, Aleppo in Syria. It is present in the towns of Cyprus, Rhodes and Samos. It has not been known in Crete, but in 1939 a "possible" was recorded at Hierapetra. In Turkey it has been found at Adana and Antalya on the south coast and up the inland valleys as far as Konia and Isparta. On the Ægean coast it is known from Aidin and Izmir

(Smyrna). It was recorded from Bursa near the Sea of Marmora as early as 1842, and is known inland from here as far as Eskişehir; and at Nicæa at the east end of Lake Iznik. In north and central Turkey it is found inland as far as Ankara and Tokat and on the Black Sea coast at Bafra and Samsun. It has not been recorded in north Turkey east of Samsun and Tokat, nor in any neighbouring part of the U.S.S.R.

Apart from Rhodes and Samos, places in Europe which are certainly inhabited now and which may well have been inhabited before the spread began, are listed in the appendix (p. 171) under groups (a). Rhodes and Samos appear to be the only Ægean islands from which *Streptopelia decaocto* has been recorded; and on the mainland of Greece the Collared Turtle Dove appears never to have been encountered, not even since the great spread started, south of the line joining Valona in Albania and Salonika. The area occupied before 1912 appears to have been the coastal region of Albania and part of the adjoining Yugoslavian coast as far north-west as Mostar in Herzegovina (where the Collared Turtle Dove was found in 1888), Macedonia, Thrace, Turkey-in-Europe, Bulgaria as far north as Philippopolis (Plovdiv) and Stara-Zagora (but not in the Danube provinces north of the Stara-Planina), and southern Serbia in Yugoslavia as far as Niš. The Collared Turtle Dove was certainly also established at latest by 1920 as far along the Black Sea coast as Constanza in the Dobrogea in Romania.

The main spread gathered its momentum primarily in the great plains and valleys of the Danube north of Belgrade, as will be described presently. However, two minor spreads appear to have taken place wholly in the Balkan Lower Danube region; although they started rather later than the main spread, it will be convenient to describe them here.

The first concerns south-western Yugoslavia and the Adriatic coast and runs from Mostar to Sarajevo (1930), thence to Nin, Benkovac and Split.

The second concerns the Danube east of the Iron Gate. In or before 1933 the Collared Turtle Dove was found in Danubian Romania at Podu-Grosului and in Western Calafat, and across the river in north-western Bulgaria was recorded from Vidin in 1937, Lom-Palanka in or before 1943 and several small towns and villages near by in 1944. Further down the Danube the Collared Turtle Dove was first recorded at Rusčuk in Bulgaria in 1932. At about the same time it was recorded at Oltenita across the Danube in Romania, and appears to have spread from here to Bucharest in 1943. In 1939 Heer (1950) with the German forces found it at Neu-Borodino in what is now Soviet Bessarabia and he records what was possibly one also at Akkerman at the mouth of the Dniester in 1940. At Galatz in Romania the Collared Turtle Dove was seen in 1944.

The Central Danube and the Plain of Hungary.—Many workers have recorded this part of the spread in great detail. It is mostly in Hungary and the Danube region of Yugoslavia, but extends into what is now Soviet Ruthenia and breaks out finally through the Bratislava-Vienna gap to fan out beyond in three directions—(a) Austria-South Germany-Switzerland-France, up the Danube; (b) the plain of Bohemia via the Brno-Pardubice gap; and (c) Poland and Germany probably by the break in the mountains in the region south-west of Moravska Ostrava.

The Collared Turtle Dove arrived at Belgrade in 1912, the nearest places previously occupied being Niš and Prokuplje in Serbia. For the first time the bird stood on the Danube west of the Iron Gate. Within 50 miles of Belgrade there were, oddly enough, no further appearances other than in the town itself until the late 1930's and early 1940's. But probably in 1930 and certainly in 1932 the Collared Turtle Dove appeared at Monor, south-east of Budapest, an advance of 180 miles from Belgrade. In 1932 it was also found in eastern Hungary at Berettyóujfalu and further down the Danube at Paks. Each of these places appears to have acted as a centre of spread. From Monor many eastern suburbs of Budapest were colonised and some places further north. From the apparent direction of Berettyóujfalu eight other places in eastern Hungary were colonised between 1935 and 1943, and in 1946/47 the dove was found in two places over the border in Ruthenia. Paks appears to have been the centre of a big consolidation of southern Hungary extending over the border to Zombor, Subotica, Zenta and other places in Danubian Yugoslavia. And from Paks there was an apparent spread also north-west reaching Székesfehérvár in 1934. From here may have been colonised the western suburbs of Budapest, both shores of Lake Balaton, western Hungary including Nagykiszta and Szombathely. From this last there appears to have been a colonisation of many places in the neighbourhood of Graz in south-eastern Austria in the late 1940's. There was also a big colonisation further west in southern Austria, at the same time, in the region of Klagenfurt; but this may have been derived from Zagreb in Yugoslavia, where the Collared Turtle Dove was first seen in 1939 and which was probably colonised from the direction of Lake Balaton. From Zagreb a further spread appears to have developed in the direction of Trieste, Fiume and the Lombardy plain of Italy, which will be described presently.

Returning to the Danube, we find the first records from Czechoslovakia in 1936 at Komárno on the north bank of the Danube and at Ipolybogen (Hontské Ďarmoty) about 70 miles to the north-east. The doves probably came to these places from the area round Székesfehérvár west of Budapest. From the direction of Ipolybogen a chain of appearances took place in villages and towns in northern Hungary, and the chain ends among the Carpathian

foothills at Michalovce and Košice in Czechoslovakia and Užhorod and Cop in Ruthenia. The most powerful spread, however, from Komárno was north-west, reaching Tyrnau and Bratislava in 1938.

North Italy.—The first record of a Collared Turtle Dove in Italy* was in 1944 at Caorle on the coast north-east of Venice. This is about 150 miles west of Zagreb in Yugoslavia, the nearest place already colonised. Since then the dove has been recorded from places north of Caorle, the most northerly being Udine. Across the top of the Adriatic *decaocto* was recorded from Trieste in 1947, from the island of Krk, Yugoslavia, in 1949 and from Fiume in 1950.

The Collared Turtle Dove's first appearance in the Po valley was in 1949 at Saronno near Milan, nearly 190 miles due west of Caorle; in 1950 it was observed in five places from Gallarate and Milan to Budrio near Bologna. In 1951 it was recorded from five more places. In May, 1952, E. M. Nicholson, C. P. Blacker, R. May and the writer observed the members of what was recorded as a breeding pair in the garden of a theological seminary in Milan, and the species probably nested as far north as the shores of Lakes Varese (Gavirate) and Como (Mozzate).

The Upper Danube, Upper Rhine and France.—The first place to be colonised by the Collared Turtle Dove in Austria was Hirm, west of the Neusiedlersee, where it was seen in 1938. It is not far from the Hungarian border and about 40 miles south-west of Bratislava, also colonised in 1938. Many places near Bratislava, Hirm and Sopron in Hungary were colonised in the 1940's. Vienna was first colonised in 1943 and many places in its suburbs and within a radius of 20 miles in the middle 1940's.

By 1948 Collared Turtle Doves were in towns and villages scattered all the way up the Austrian Danube and as early as 1946 some had crossed the German border and bred at Straubing, thence to reach Augsburg in 1947, the neighbourhood of Munich, Aalen and near Stuttgart in 1948. In 1949 they had crossed into S.W. Czechoslovakia (České Budejovice) and had reached Klatovy by 1952. By 1949 the Collared Turtle Dove was also in the Upper Rhine; it was recorded in northern Switzerland at Rothrist; by 1950 it was found also in the Zurich canton and at Basel, and at Remomeix in Vosges, France, about 55 miles west-north-west of Basel. The bird recovered at Juniville in the Ardennes in 1952 was nearer here than the locality of any other previous record; but it had been marked in a nest near Halle in Saxony the previous year.

The Plain of Bohemia.—Judging by the order in which its places were colonised, Bohemia was invaded from the south-east (though the Collared Turtle Doves of Dresden—at the gate of Bohemia—and

* The bird recorded by Doderlein (1867-71, quoted Giglioli, 1889) from the outskirts of Modena may have been *S. risoria*, most probably.

its neighbourhood may have come from exactly the opposite direction). From Vienna (1943) the dove reached north over the Czech border to Brno (Brünn) in the same year. By 1946 it was through the hills by Svitavy to Pardubice, and in 1947 and 1948 reached at least 13 places in the whole breadth of the Bohemian Plain, including Prague in 1947. The bird that reached Zittau in East Saxony, Germany, in 1950 may have been of the Bohemian colonists rather than of the Saxony spread.

Poland.—The Collared Turtle Dove appears to have passed through the Olomouc-Moravska Ostrava gap in 1940 when one was seen at Öls (Olesnica), north-east of Breslau, in what is now Polish Silesia. The nearest places previously reached were Tynau (Trnava) and Nagyszombat north-east of Bratislava in Czechoslovakia, 195 miles away. In 1949 it was first seen at Kraków, nearly 100 miles east-north-east of the nearest previously inhabited place (Valašské Meziříčí in Moravia); and in 1950 first bred there, being also seen in that year at Bochnia and Nowy Sacz, south-east of Kraków. Also in 1950 *decaocto* was seen at Posnán, 85 miles north of Öls, and well down into the Plain of Poland.

The North German Plain.—The first records of the Collared Turtle Dove in Germany * were in 1945 at Haldensleben and Gröningen in Lower Saxony, and at Pattensen near Springe, south-west of Hanover. The nearest previously inhabited point was Öls in Silesia, 260 miles east of Gröningen! These places appear to be the centres of a considerable colonisation. One "spread" has apparently penetrated Saxony in a south-easterly direction, reaching Wettin and breeding in Oschatz in 1947; and reaching, by 1951, up the Saale as far as Halle (1950) and Jena (1951), up the Mulde as far as Zwickau and up the Elbe beyond Dresden to the gate of the Bohemian Plain. From this area come the two ringed Collared Turtle Doves so far recovered. One was caught in a chicken-run at Haldensleben (Calvörde) on January 19th, 1951, and was shot on October 10th, 1951, at Latisana, south-west of Udine in northern Italy about 445 miles south (Weber, 1952). Dr. F. Goethe informs me that *S. decaocto* bred at Holleben near Halle in 1951, and that a nestling ringed there on July 24th was found dead on May 1st, 1952, at Juniville in the Ardennes—the furthest penetration of France so far recorded, and about 360 miles W.S.W. of where it was ringed.

Another spread struck east-north-east from Saxony into Brandenburg in 1950 and 1951, the doves appearing in 9 places from Paylitz in the west to Berlin, and south to Töpchin, north to Templin.

* Ludwig Koch tells me that in June 1929, while making a sound recording of the Eagle Owl (*Bubo bubo*) at Merseburg-an-der-Saaleck in Thuringia, he heard and recorded a peculiar note from a dove. When he played this later to O. Heinroth, Heinroth identified it as *S. decaocto*. It was in orchard country about 1 km. from houses, and Koch points out that it might have been an escape.

Other spreads went south-west ; four places on the south side of the Harz Mountains were visited in 1950, and in 1951 Northeim : and the spread south-west to Hesse on the Rhine (see below) can also be derived from Haldensleben.

Brunswick was colonised in 1949 ; it lies between Gröningen and Springe, the places in Saxony and Hanover reached in 1945. North of Brunswick Collared Turtle Doves have now extended as far as Dannenberg, where they bred in 1950. From Hanover a spread south-west brought the dove in 1947 to Soest in Westphalia at the edge of the Ruhr ; it is from here that we can trace spreads into central and north Holland (p. 165).

The arrival and breeding of the Collared Turtle Dove at the Hanover town of Celle on the Aller in 1948 appears to have been an important event, for it is the nearest place to the appearances by the North Sea coast of Germany and Denmark, in the Kattegat and at the west end of the Baltic in 1948-50, which will be described presently.

Hesse.—The Collared Turtle Dove was seen at Hofheim in this Rhineland province in 1946 ; it is 175 miles from Haldensleben in Saxony, the nearest previously inhabited point. By 1948 it had spread to Ingelheim on the Rhine and Fulda, by 1949 to Mainz, Mannheim and Göttingen, by 1950 to Frankfurt, Aschaffenberg, Worms and Wetzlar. The southernmost points so far reached in this area are Hockenheim in Baden in 1949 and Lachen near Neustadt in the Palatinate in 1951.

Baltic Kattegat.—On May 20th, 1949, an undoubted Collared Turtle Dove was seen at the island observation station Vogelwarte-Hiddensee off the Baltic coast of Pomerania. Hiddensee is 180 miles north-east of Celle, the nearest place to be occupied before 1949. This has not been the only Collared Turtle Dove seen at the west end of the Baltic ; for 75 miles further north one was captured at Malmö in Sweden on October 15th, 1950, and in the same year ('summer') some were seen at Harlösa 20 miles N.E. of Malmö. These birds at Harlösa bred (2 pairs) in 1951 and attempted to do so in 1952. However, in 1948 an even greater 'leap' took place, for Collared Turtle Doves in that year were seen (and have been seen since) at Skagen at the very north tip of Jutland in Denmark. This is 355 miles north of Celle. Next year, on May 16th, 1949, one was shot at Råö in the parish of Onsala, in Halland, Sweden, on the other side of the Kattegat ; and in 1952 one was seen at Fjärås, 12 miles N.E. of Råö.

German and Danish North Sea Coast.—This appears to have been colonised from the direction of Celle in two 'prongs'. The more northerly reached Husum and Drelsdorf in Schleswig in 1949, and in the following year the dove was seen at Dithmarschen, also in Schleswig. The limit of this part of the spread appears to have been

reached at Holstebro in Jutland, Denmark, 120 miles north of Drelsdorf, where at the beginning of July, 1950, a female Collared Turtle Dove appeared, mated with a male Barbary dove (*Streptopelia risoria*) and produced hybrids. Later in the same year another Collared Turtle Dove was seen at Bøvlingbjerg on the coast north-west of Holstebro, a male appeared at Holstebro, and one was caught at sea, 3 miles off Nymindegab, Jutland.

Down the Weser from Celle Collared Turtle Doves arrived in Bremen, Wilhelmshaven and Dorum in 1950 and in the same year up the coast in Cuxhaven; in 1951 also Bederkesa.

Holland.—We can derive the Collared Turtle Doves of both north and central Holland from Soest in the Ruhr, where the bird was first seen in 1947. In 1950 it reached Lüdinghausen in Westphalia, Nordhorn in Western Hanover, and continuing down the west side of the Ems, Musselkanaal over the Dutch border, where a pair bred in 1950. and a bird was again present in 1952.

The main Dutch group is, however, at the south-east end of the Zuider-Zee. A pair probably wintered at Harderwijk in 1948-49, probably bred there in 1951 (three were seen) and certainly bred there in 1952. Pairs (or two birds) were seen at both Hulshorst and Oldebroek in 1950. A pair was seen at Amersfoort in 1952; later 8 birds, mostly juveniles; still later no less than 16.

Britain.—At Manton in Lincolnshire a male Collared Turtle Dove held a territory through the summer of 1952 (May and Fisher, 1953). Circumstances are such that the possibility of its having been an "escape" cannot be ruled out, though the writer is of the opinion that it is more likely to have been a wild bird than not.

* * *

THE GENERAL NATURE OF THE SPREAD.

In the maps (p. 166, plate 26) which have been prepared of the spread, the sequence of events has been made clearer by joining points where the Collared Turtle Dove has been observed to the nearest point where it had been previously observed. This device was not adopted on the assumption that it would indicate the *real* sequence of the colonisation, or that when they spread through Europe the Collared Turtle Doves would necessarily do their pioneering by extending paths already colonised. The only two ringing recoveries available show very clearly that some pioneering doves at least, do not come from the nearest place colonised but from a considerable distance. The dove that appeared at Latisana in North Italy in 1951 was marked as an adult about 445 miles away in Saxony nine months before. The dove found dead in the Ardennes was about 360 miles away from where it had been ringed as a nestling in Saxony, not much over nine months before. And even by joining points to nearest previous points we have to take account of 'hops' of up to 355 miles. Unquestionably, then, individuals of the spreading Collared Turtle Dove can make great

seem that many suitable areas have been colonised in a very orderly way. The sequences of events in the Upper Danube, in the Carpathian basin and in the Bohemian Plain round Prague bear this out. In one year several places will be simultaneously colonised in a main part of a valley ; in a subsequent year apparent thrusts will penetrate a few miles more into towns and districts up the side-valleys.

The main phase of the spread has occupied a singularly short time, for it cannot be said to have warmed up until the early 1930's. In the last 30 years, the Collared Turtle Dove has been observed in at least 468 places in Europe at which it has never been observed before, those in Scandinavia lying about 1,200 miles from Belgrade, the point where the spread can be said to have started in 1912, and Monor in Hungary where it can be said to have ' caught fire ' in or before 1932. Up to 1943 (the last year in which Keve-Kleiner gives a detailed account of occupied places in Hungary) the number of localities in which the Collared Turtle Dove had been observed beyond its basic Balkan distribution (see plate 26) had risen from 4 or 5 to no less than 169, and a plot of the number of places visited has been geometric (multiplicative) rather than arithmetic (additive): the number of places recorded consistently increased at about thirty per cent. per annum, an extraordinary figure. After 1943 the average number of new places recorded annually fell to about twelve per cent. of the number of places recorded by the previous year ; but this itself continues to be a remarkable increase. If the increase had continued after 1943 at the same rate nearly 2,000 places would have been recorded by 1952. Unquestionably the sudden change in the rate of increase was due to the cessation of detailed recording in countries where the dove was becoming commonplace. Unfortunately, detailed records have not been published for Hungary and Jugoslavia after 1943, for Bulgaria and Romania after 1944, for the U.S.S.R. after 1947 and for Austria after 1949, though thanks to private information from Dr. W. Černý I have records from Czechoslovakia to 1952. In Germany detailed publication of records continues, to include those of the season 1951, and in the countries to which the Collared Turtle Dove has only spread in the last few years, such as Poland, Italy, Switzerland, France, Holland, Denmark, Sweden and Britain, ornithologists are so expectant that the chances of records being overlooked or unpublished are probably very small. I doubt, however, if even the thorough Germans will continue to record every *decaocto* occurrence any longer. Although their first bird did not arrive till 1945, they had recorded the species from no less than 78 places by the end of the season 1951.

HABITAT.

In its spread across Europe the Collared Turtle Dove has shown certain pronounced habitat preferences which have been widely

commented upon. The literature is full of evidence that what it likes for food and shelter resembles very closely that which it enjoys in India, which can be assumed to be its ancestral home. It is a graminivorous bird of parks, gardens and cultivated land, typically where cultivated land abuts on marginal scrubland, and it has become a pronounced parasite, or at least symbiote, of Man, having little fear of him (at least in much of its range) nesting freely in his gardens, frequently feeding with his chickens and other domestic animals and raiding his ripened corn and stackyards*. Of the birds of Turkestan, the Collared Turtle Dove, according to Gladkov (1938) is among those most rigidly confined to the cultivated parts, and his investigation suggests that it has spread into Central Asia relatively recently after the rise of cultivation. Keve-Kleiner's very fine analysis (1944) of the literature shows how closely the establishment of the Collared Turtle Dove is associated with villages and small holdings.

The first record of a Collared Turtle Dove at a village is, of course, not always followed by the arrival of a mate and successful breeding. Several of the Continental records are winter ones, often of wandering flocks, some of up to a hundred members, obviously in search of food. But from May to September the pioneers appear to become mostly resident and territorial, and, if they find mates, may frequently rear three broods in a year and almost always two. The species seems emphatically disposed to nest in conifers, particularly cypresses, also cedars, larches and pines. Perhaps the greatest amount of movement, and certainly the greatest crop of desultory records, takes place in autumn, as might be expected with new-fledged young birds "seeking their fortunes."

CAUSES AND COMPARISONS OF THE SPREAD.

The intention of this paper is primarily to establish in detail the true events of the great spread of *Streptopelia decaocto* across Europe, rather than to examine the reasons for it or enter into other aspects of the Collared Turtle Dove's life, such as its breeding habits. The spread, as far as can be seen, bears no resemblance to the occasional incursions of Mediterranean species, north-westwards, under exceptional circumstances, such as brought the great invasions of Pallas's Sandgrouse (*Syrhaptes paradoxus*) to Britain in 1863 and 1888, or the breeding Black-winged Stilts (*Himantopus*

* In their comment (*antea*, p. 55) to the paper by May and Fisher (1953) the Editors of *British Birds* suggest that the Lincolnshire Collared Turtle Dove of 1952, which gradually deserted the chicken-run in which it first fed on arrival, showed behaviour consistent with a bird that had been in captivity and was gradually turning to a fully wild existence. It is of course possible that the Manton bird may have been an "escape," but it is quite commonplace behaviour for the spreading wild Collared Turtle Dove on the Continent to turn up at chicken-runs. The seasonal change of the Lincolnshire bird to ripe corn could have been simply a move to an even easier food-supply than that in the chicken-run; its increasing restlessness, due to the eventual waning of its long territorial "drive."

himantopus) to Nottingham Sewage Farm in 1945. The Collared Turtle Doves have consolidated their invasion of Europe by breeding in it almost as quickly as they have pioneered it. Often they arrive in villages for the first time one spring and produce more than one brood in the same season. Nearly always they breed within two years of first holding a territory at a place. But it is not possible to state what percentage of the 468 places recorded for the dove in Europe are now breeding-places, for the literature is often equivocal on such matters.

Species which have spread or are spreading in a northerly or north-westerly direction in Europe are now known to be many. Much attention has recently been given to the consequences of the ameliorating summer climate of Europe. One of the more interesting spreads, which has been going on for very much longer than that of the Collared Turtle Dove, is the spread of the Serin (*Serinus canarius*). Ernst Mayr (1926) was the first to make a really detailed statement and summary of the spread of the Serin across Europe. His admirable analysis is not accompanied by maps, but there is a good one in the paper by B. Rensch (1941) which shows that in about 1800 the range of the Serin extended not much further north than Yugoslavia, Italy and the southern part of France, with extensions up the Rhône into the Upper Rhineland and into the western part of the Carpathian Basin. Very much more slowly than that of the Collared Turtle Dove, but quite surely, a spread subsequently took place, at first further up the Danube and down the Rhineland and into the German plain, but also west through France; the latter is agreeably described by Delamain (1933). At present breeding Serins have reached the Channel coast, though not on its full length, and have penetrated far into north Germany. However, in 150 years the Serins have not gone nearly so far as the Collared Turtle Doves have gone in 20.

During the last century and the early part of the present century another species, the Grey Wagtail (*Motacilla cinerea*) had an expansive phase rather similar to that of the Serin, though its expansion seems now to have stopped. "During this period," writes Mayr (1942) "it descended from the mountains and hills of central Europe and colonised the great plains of northern Germany and Denmark, finally reaching mountainous Scandinavia, where it multiplied very rapidly."

Some other species, however, have recently begun to spread north-westwards with a velocity very much greater than that of the Serin or the Grey Wagtail, though still not approaching that of the Collared Turtle Dove. Schenk (1944b) describes the spread of the Olivaceous Warbler (*Hippolais pallida*) into the Hungarian plain from the Lower Danube. In 13 years it advanced over 150 miles. According to Keve-Kleiner and Udvardy (1951) the Syrian Woodpecker (*Dryobates syriacus*) was discovered in the Lower

Danube in 1928 and by 1950, in 22 years, had advanced over 160 miles. This woodpecker has continued its spread and, a species unknown in Europe before 1890, has now reached southern Slovakia. In 1951 there was circumstantial evidence that it bred in Austria by the Neusiedlersee (Bauer, 1952, who gives a good map of the spread), and it was proved to breed there in 1952 (Mächler, 1952).

These spreads from the south-east, from the Near East, are quite different from the westward spread of certain northern species like the Yellow-breasted Bunting (*Emberiza aureola*) (see Timoféeff-Ressovsky, 1940, and Kleinschmidt, 1941). Probably the later ones are more closely connected with climate than are the earlier spreads of the Serin and the Grey Wagtail. But in all cases some initial barrier appears to have been lifted so that the species could surge forward. In the case of the Collared Turtle Dove there is no doubt that once it had penetrated into the Carpathian Basin, every further move north-westerly took it into country where the human population was increasingly tolerant of wild birds; even of parasites of cultivation and poultry-rearing, if the Collared Turtle Dove can be so described. The Collared Turtle Dove was virtually (and in some cases, actually) protected in most western European countries before its arrival.

The search for the real reason or reasons behind the Collared Turtle Dove's spread seems likely to entertain European ornithologists for a considerable time. Whatever the underlying cause or causes, it seems likely that the spread has been so successful and spectacular partly because of man's new-found tolerance of wild animals.

Mayr (1942) writes that: "The biographer encounters not infrequently the phenomenon that a species, after a long period of stagnation, suddenly enters upon a phase of aggressive range expansion." He shows that this type of phenomenon might even be termed "frequent"; though students of the range-statements in most faunal textbooks (even *The Handbook*) might not think so. Later, Mayr (1951) expresses himself quite categorically in suggesting that "in all cases of explosive range expansion such as have occurred in the Serin . . . and in the Ring Dove (*Streptopelia decaocto*), there is reason to believe that this expansion was initiated by a genetic alteration of the peripheral populations." While I do not believe this necessarily applies to the Fulmar, whose range-change can be explained by a change in food-supply, I am sure that Mayr's suggestion fits the case of the Collared Turtle Dove. But what has altered, and the mechanism of the change, remain mysteries.

During their aggressive periods, Mayr shows, species may jump geographic barriers that would normally stop them. *Streptopelia decaocto* has made such a jump; indeed it has made one of the most remarkable range-changes to have been recorded, ever since man began to record the ranges and changes of birds.

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APPENDIX

RECORDS OF THE COLLARED TURTLE DOVE IN EUROPE.
(Post-war Political Boundaries.)

There is no certainty that the years (a)—which are the earliest in which Collared Turtle Doves have been recorded at the places named—correspond to the years in which the doves actually first came to the places. The years (b), however, are probably close to, or the same as, the years of first arrival. Years in brackets are those of publication of undated records which have therefore occurred in that year or a previous year. Numbers in brackets after the name of the country give the total places recorded.

TURKEY-IN-EUROPE (6).

(a) c. 1547 Constantinople (Istanbul); (1920) Adrianople (Edirne); 1937 Rodosto (Tekirdag), Alpullu, Usunköprü; (1950) Dardanelles.

(Adametz & Stresemann, Belon, Keve 1944, Molincux, Moltoni 1950, Naumann, Stresemann 1920 1948b 1950.)

GREECE (9).

(a) 1911 Rhodes; 1918 Vertekope (Cbeltikchi); 1934 Salonika; 1935 Kavalla, Xanthi, Alexandroupolis (Dede Agach), Komotini (Gumurdjina); (1950) Samos.

(b) 1939 (probable) Hierapetra (Kasteli) in Crete.

(Bodenstein 1949, Glegg, Harrison & Pateff, Jany, Keve 1944, Molineux, Moltoni 1950, Profft, Stresemann 1920, Weigold, Wettstein, Wirries; and information from Goethe.)

ALBANIA (5).

(a) (1393) Valona; 1900 Scutari; c. 1906 Durazzo; 1931 Elbasan; 1935 Fjeri.

(von Führer, Keve 1944, Lodge, Salvadori 1893, Ticehurst & Whistler 1932, Whistler 1936.)

YUGOSLAVIA (59).

(a) 1888 Mostar; (1893) Niš, Leskovac, Prokuplje; 1894 Beri, Busovnik, Botun; 1917 Skoplje (Šküb), Veles (Köprülü); (1920) Novo Selo (Istip).

(b) 1912 Belgrade; 1915 Belgrade-Kalimegdan, Belgrade-Topčider; 1930 Sarajevo; (1931) Nin; 1932 Ljubinje; 1934 Apatin; 1937 Pétervárad, Vukovár; 1938 Ujvidek (Neusatz, Novi Sad), Zenta, Adorjan Szabadka (Subotica), Fehértemplom, Versec, Istvánvölgy; (1939) Benkovac; 1939 Zagreb (Agram), Varazdin, Csantavér, Szeghegy; 1941 Sztapár; 1942 Zombor, Bácsalmás, Ujverbász; (1943) Tetovo (Kalkandelen), Novak (Rudoka, Planina), Peč (Ipek), Hadzarbar, Agino-Selo, Ramanovci, Kumanovo, Tabanovce, Riskovac, Nikšić, Pirov, Aleksinac, Stalac, Sikirica; 1943 Vaskapu, Tiszaistvanfalva, Temerin, Pancsova, Hertelendyfalva, Topolya, Magyarkanizsa; 1949 Veglia (Malinska on Krk); 1950 Metkovic, Fiume (Rijeka), Spalato (Split).

(Adametz & Stresemann, Bodenstein 1949, Csornai, Dathe, Dorning 1938 1939, Gebhardt 1941, Keglevich, Keve 1942 1944, Keve & von Udvardy, Kroneisl, Lintia, Mastrovic 1931 1942, Matvejev, Molineux, Nagy 1938, Reiser 1893, Reiser & von Führer, H. Schenk 1939b, Stadler, Stresemann 1920, Szent-Ivány, Wábl 1935 1942.)

HUNGARY (95).

(b) 1932 Monor (possible 1920, probable 1930), Berettyóújfalva, Paks; 1934 Székesfehérvár; 1935 Derecske, Bicske; 1936 Kismarja, Keszthely; 1937 Debrecen, Péteri, Vasad, Soltvadkert, Baja, Budafok, Balatonszemes-Rád, Budapest-Kelenföld; 1938 Küllöd, Rákospalota, Zalaapáti; 1939 Dunabökény, Békéscsaba, Mátészalka, Miskolc, Csömör, Rákosszentmihály, Mátyásföld, Rákoskeresztúr, Pestszentlőrinc, Budapest-Mártonbegy, Budapest-St. Janos Spital, Balatonboglár, Egervár; 1940 Szeged, Szada, Ujpest, Pestjuhely, Budapest-Zugló, Sasbalom, Budapest-Népliget, Kispest, Dunaharaszti, Budapest-Rózsadomb, Győr, Szombathely; 1941 Szeghalom, Érsekcsanád, Cegléd, Gyömrő, Pécel, Budapest-Rákosfalva, Budapest-Kőbánya, Budapest-Tisztviselőtelep, Érd, Nagykanizsa, Fonyód, Balatonföldvár, Tibany, Sopron, Balatonfüred; 1942 Hortobágy, Gyoma, Budapest-Németvölgy, Budapest-Vár, Budapest-Békmegyer, Budapest-Tahitótfalu (Szent-Endre), Simontornya, Tolna, Kaposvár, Balatonszék, Siófok, Tata, Hatvan; 1943 Baranya, Szeged-Febértó, Pécs, Németboly, Bata, Zsáka, Hajduböszörmény, Jászberény, Békova, Kun-szentmiklós, Kecskemét, Vecsés, Budapest-Állatkert, Sárospatak, Atkár, Ecseg, Fadd, Pátka, Budapest-Orbánbegy, Budapest-Margit Kórbáz, Pápa, Magyaróvár, Rajka.

(Adametz & Stresemann, Agárdi, Baranyovits, Beretzk, Bezsilla, Dorning 1938 1939, Keve 1937 1942 1944 1948, Keve & von Udvardy, Máté, Nagy 1935 1938, J. Schenk 1944 1944b 1944c, Sölymosy, Sóvágó, Stresemann 1943 1948b, Szent-Ivány, Szlávay, Tarján, von Udvardy 1939 1944, Vasvári.)

CZECHOSLOVAKIA (101).

(b) **1936** Komárno, Hontské Darmoty (? Ipolybogen); **1938** Trnava, Bratislava, Ipolykürt; **1939** Nagyszombat; **1940** Nové Zámky, Nitra; **1943** Michalovce, Brno, s. of Hodonín; **1944** Nové Mesto, Piešťany, Topoľčany, Kyjov; **1945** Ort Ogyalla, Hnúšťa, Hodonín, Strážnice, Malacky, Myjava, Modra, Sereď, Lok, Levice, Pohorelice; **1946** Košice, Pardubice, Znojmo, Banská Štiavnica, Svitavy, Moravany; **1947** Moravské Budějovice, Přerov, Lipník, Olomouc, Litomyšl, Kostelec n.O., Jaroměř, Trěbechovice, Čáslav, Praha (Prague), Vranov n. Toplou, Velká Bystrice, Uherský Brod; **1948** Velká Bíteš, Ivančice, Hrotovice, Valašské Meziříčí, Kolín, Louny, Chomutov, Žilina, Turč, Martin, Trenčín, Prievidza, Blansko, Žďár, Těchonín v Orli, Horách, Chrudim, Litvínov; **1949** Kutná Hora, Toušen n.L., Litoměřice, Bačovo (Batjevo), Muráň, Slavkov u Brna, Holešov, České Budějovice, Police n. Metuji; **1950** Liptovský Mikuláš, Krnov, Opava, Skalice n. Svitavy, Boskovice, Jablunko, Ostrava-Radvanice, Teplička-Lázně, Duchcov, Zabužany, Podbořany; **1951** Sokolnice u Brna, Mohelnice, Místek, Heřmanův Městec, Hořice, Roudnice, Kralupy, Slaně, Katovice u Strakonice; **1952** Zvoleň, Okolíčno, Huncovice, Velká Lounice, Strážky, Banská Bystrica, Dolní Kubín, Trutnov, Klatovy, Jihlava, Turnov.

(Bodenstein 1949, Černý, Ferianc, Jany, Keve 1944, Müller-Using; and information from Černý.)

BULGARIA (21).

(a) 1834 Philippopolis (Plovdiv); (1859, 1879) other towns?; 1893 Stara-Zagora; 1919 Sofia; (1920) Odrin; 1930 Burgas; 1932 Petrich, Sveti Vrach, Ruse (Rusčuk); 1935 Ludzene; 1936 Mariupole, Paril, Golešewo.

(b) **1937** Vidin; (1943) Harmanli, Krynowo, Lom-Palanka; **1944** Maraschewo, Ljuta, Lehčewa, Hajredin, Cerven Breg.

(Adametz & Stresemann, Andersen, Belon, von Boetticher 1919 1919b 1937 1941, Dorning 1938 1939, Finsch, Frivaldszky, Haase, Harrison, Harrison & Pateff, Keve 1937 1944, Nagy 1938, Niethammer 1950, Radakoff, Reiser 1893 1894, Scharnke & Wolf, Stresemann 1920.)

ROMANIA (8).

(a) (1920) Constanza (Kustendji), not in 1893.

(b) (1933) Oltenita, Podu-Grosului (Mehedinti), Darvari, Obrasia, Western Calafat; **1943** Bucharest; **1944** Galatz.

(Adametz & Stresemann, Călinescu, Frank, Keve 1944, Nagy 1938, Otterlind, Reiser 1894, Stresemann 1920.)

U.S.S.R. in Bessarabia (formerly Romania) (2).

(b) **1939** Neu-Borodino; **1940** Akkerman.

(Heer.)

U.S.S.R. in Ruthenia (formerly Czechoslovakia) (4).

(b) **1944** Užhorod (Ungvar); **1946** Beregszász (Beregov, Beregsasy); **1947** Sevlúš (Nagy-Szőllás), Čop (Csap, Chop).

(Deinent'ev, Meklenburtsev.)

AUSTRIA (80).

(b) **1938** Hirn; **1943** Vienna (Wien-Döbling), Wiener-Neustadt, Korneuburg; **1944** Mistelbach, Pomisch b. Frain, Manhartsberg, Feldkirchen, Fraunkirchen; **1945** Graz, Kalsdorf, Klosterneuburg, Orth im Marchfeld, Loimersdorf, Wien-Mauer, Wien-Hetzendorf; **1946** Gratkorn, Frohsdorf, Thumersbach; **1947** Glan-Dreieck, Wolfsberg, Sattitzermoor, Salzburg, Wolkersdorf, Deutsch-Wagram, Gross-Enzersdorf, Himberg, Tullnerfeld, Mödling, Manhartsberg (Pulkau), Krems a.d. Donau, Maria-Tafel, Innviertel, Mühlviertel (Perg), Lassnitzal, Leibnitz a.d. Sulm, Schärding; **1948** Klagenfurt, Spittal, St. Veit, Marchfeld-Stopfenreuth, Marchfeld-Engelhartstetten, Marchfeld-Grossenbrunn, Marchfeld-Lasseer, Petronell a.d. Donau, Sarasdorf, Margarethen am Moos, Bruck a.d. Leitha, Hainburg, Wolfsthal, Weinviertel, Litschau Waldviertel, Pfifferlingberg, Ebelsberg-Traum-mündung (Linz), Bad Hall, Droisingerwald b. Steyr, Neukematen b. Piberbach, Frankenmarkt a.d. Vöckla, Kainachtal, Maria-Trost, Murau, Feldbach, Fladnitz a.d. Raab, Egelsdorf, Neusiedel a. See, Zurndorf a.d. Leitha, Podersdorf, Lutzmannsburg, Rechnitz, Klosters Tanzenberg, Hörzendorf im Glandreieck, Zöllfeld, Krumpendorf a. Wörther See, St. Andrä i. Lavanttal, Salzburg-Anif, Salzburg-Hallein, etc.; **1949** Villach, Grafenstein, Linz, Steyr, etc., etc.

(Adametz, Keve 1948, Niethammer 1943 1943b, Stresemann 1948, Zimmermann.)

GERMANY (78).

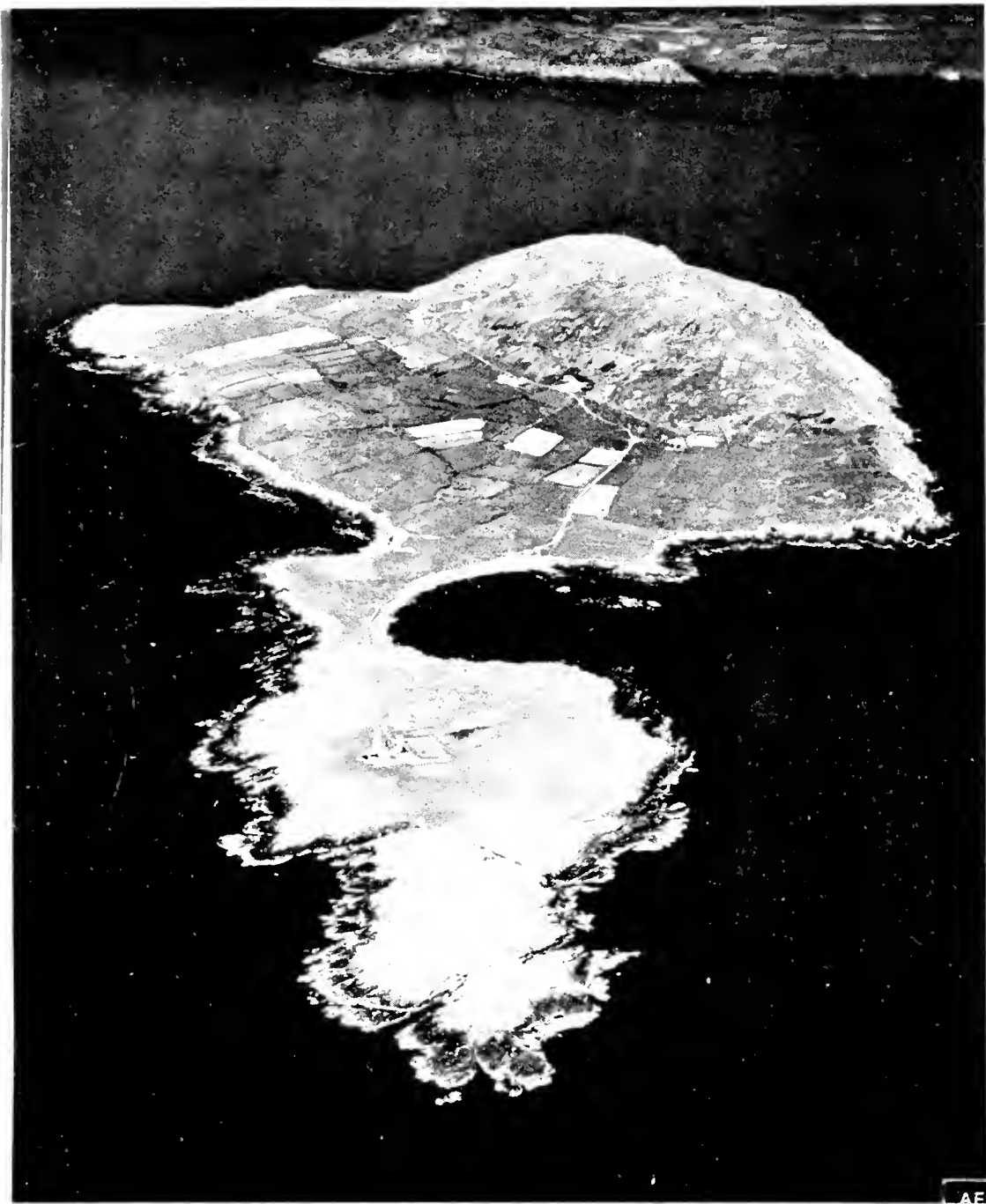
(b) **1945** Pattensen (Springe), Haldensleben (Kreis Oschersleben), Gröningen; **1946** Straubing, Hofheim; **1947** Gut Elmarshausen (Hessen), Augsburg, Soest, Wettin, Oschatz; **1948** Celle, Schluffelder Mooses (Schleissheim), Hollern (Freising), Trochtelfingen (Aalen), Ludwigsburg, Ansbach, Nürnberg, Fulda, Ingelheim a. Rhein; **1949** Hannover, Neuburg, Mainz, Hiddensee, Braunschweig (Brunswick), Mannheim, Husum, Drelsdorf, Gross-Stemberg (Kreis Grimma), Göttingen, Hockenheim; **1950** Nordhorn, Lüdinghausen i. Westfalen, Herzberg (Harz), Duderstadt, Osterode (Harz), Wolfsburg (Kreis Gifhorn), Heide, Cuxhaven, Dorum, Bremen, Wilhelmshaven-Vosslapp, Töppchin (Kreis Teltow), Prieros, Biesenthal, Leuenberg, Templin (Uckermark), Berlin, Meerane, Sangerhausen b. Lauterberg, Halle (Saale), Paylitz (Kreis Genthin), Kölleda, Dresden-Loschwitz, Lausnitz b. Königsbrück, Grossschonau (Kreis Zittau), Frankfurt a. M., Wetzlar, Worms, Aschaffenberg, Dannenberg, Dithmarschen; **1951** Angermünde, Zwickau, Wurzen, Giebichenstein in Halle, Tangerhütte, Köthen, Raguhn, Jena, Lachen (Pfalz), Calvörde (Haldensleben), Radeberg, Dresden-Plauen, Dresden-Klotzsche, Dresden-Pillnitz, Dresden-Leuben, Northeim, Bederkesa.

(Bodenstein 1949 1949b 1950b 1951, Buse, Creutz, Desselberger, Dunkelmann, Gebhardt 1950, Grunefeld 1950 1952, Hahn, Heer, Hennings, Hofstetter, König, Kühn, Lüders, Müller, Rauhe & Focke, H. Schenk 1951, Schmitt, Schweigman & others, Stay, Stresemann 1948 1949 1950 1950b 1951, Witte, Zabel.)

POLAND (5).

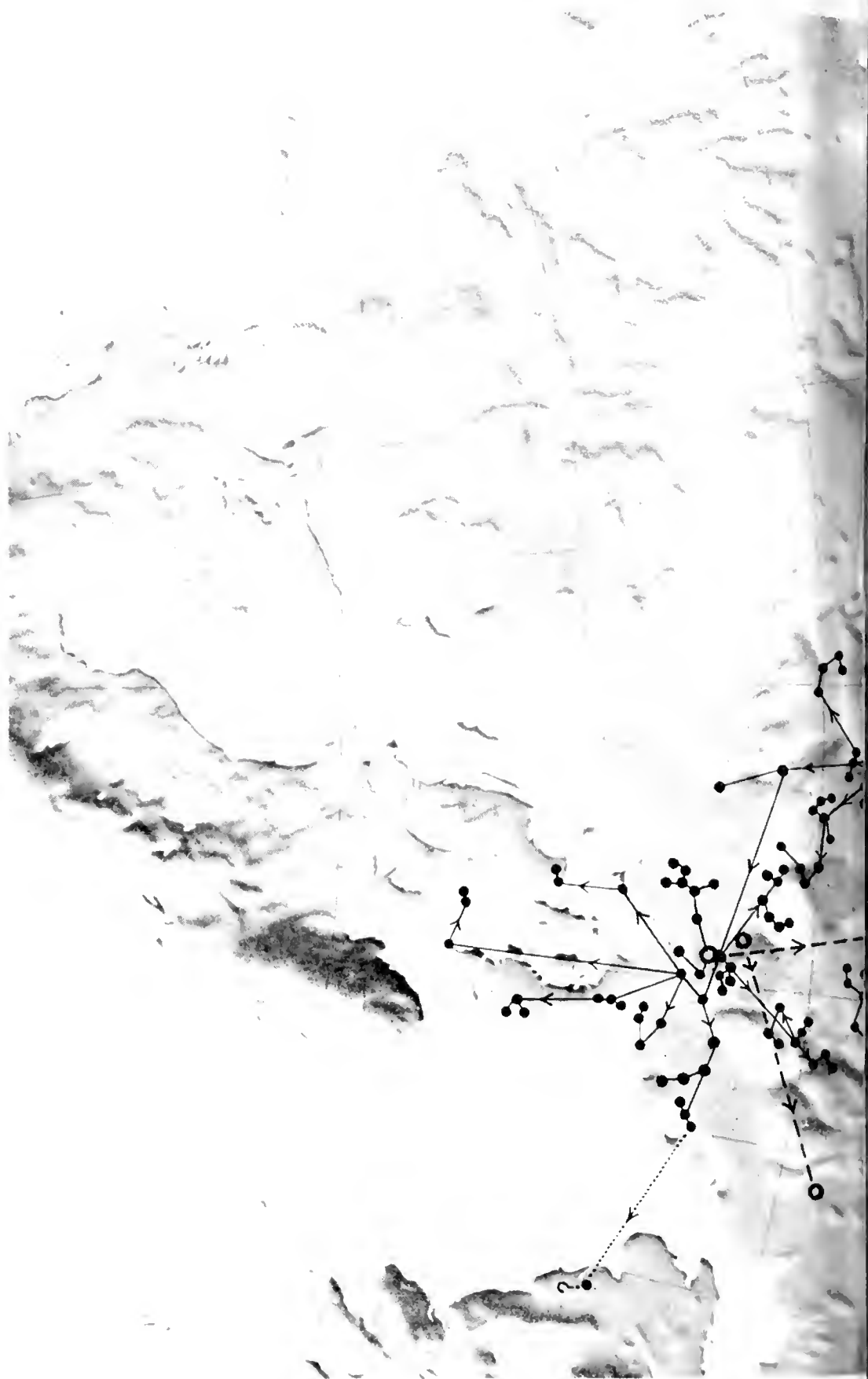
(b) **1940** Olesnica (Öls, former Germany); **1949** Kraków (Krakau, Cracow); **1950** Poznań (Posen), Bochnia, Nowy Sącz (Neu Sandec).

(Miczynski, Stresemann 1951, Wirries.)



BARDSEY ISLAND FROM THE AIR, LOOKING SLIGHTLY EAST OF NORTH.
(*Photographed by AEROFILMS, LTD.*)

This picture gives a good impression of the shape and contours of this Welsh island, the birds of which were described in the April number (*antea*, pp. 131-137).





MAP III : SIMPLIFIED MAP OF THE SPREAD OF THE COLLARED TURTLE DOVE (*Streptopelia decaocto*) ACROSS EUROPE, PLOTTED ON A RELIEF OUTLINE, SHOWING THAT THE NORTH-WESTERLY INFILTRATION HAS PROGRESSED THROUGH THE PRINCIPAL VALLEYS AND MOUNTAIN-BREACHES.

The shaded area represents that occupied by *c.* 1900. Unbroken lines connect spots with nearest places at which previously recorded. Broken lines connect origin- and recovery-spots of the two ringing returns.



LEFT.—ST. TUDWAL EAST. A VIEW OF PART OF THE SOUTH CLIFFS, JULY 10TH, 1951.
(Photographed by J. T. HOBBS).
(see page 182).

RIGHT. OLIVACEOUS WARBLER (*Hippolais pallida*), SKOKHOLM, PEMBROKESHIRE, SEPTEMBER 23RD, 1951.
(Photographed by P. J. CONDIE).
This shows the spread wing and tail of the bird recorded on page 101. The wing-formula and the characteristic shorter outer tail-feathers can be noted.

ITALY (18).

(b) 1944 Caorle; 1947 Trieste; 1949 Saronno; 1950 Budrio, Milano, Lodi, Gallarate, Fagagna (Udine), Portogruaro, Carpi (Modena); 1951 Latisana,¹ Rovigo, Bologna, Correggio, Tradate, Castano Primo; 1952 Gavirate (Varese), Mozzate (Como).
(Bastia, Favero, Frugis, Moltoni 1947 1950 1950b, Sevesi 1950 1950b, Weber; and information from Frugis.)

SWITZERLAND (3).

(b) 1949 Rothrist (Oltingen); 1950 Basel, Zurich.
(Bodenstein 1949 1950b, Feuz, Haller, Lochbrunner.)

FRANCE (2).

(b) 1950 Remomeix (Vosges); 1952 Juniville² (Ardennes).
(Laurent; information from Goethe.)

HOLLAND (5).

(b) 1949 Harderwijk; 1950 Hulshorst, Musselkanaal, Oldebroek; 1952 Amersfoort.
(Bierman, van den Brink, Tjittes 1950 1952; and information from Tekke.)

DENMARK (4).

(b) 1948 Skagen; 1950 Holstebro, Bovlingbjerg, Nymindegab.
(Jensen, Jorgensen, Poulsen.)

SWEDEN (4).

(b) 1949 Råö (Onsala); 1950 Malmö, Harlösa; 1952 Fjärås.
(Fontaine, Noréhn, Strömberg.)

BRITAIN? (1).

(b) 1952 Manton (Lincs.).
(May & Fisher.)

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The literature here listed has, unless marked with an asterisk *, been seen in the original. Many of the papers cited, for instance those of Keve and Stresemann, quote profusely from local European natural history, sporting and outdoor magazines not available in this country. It would be tedious and unnecessary to cite these again.

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Wacholtz, p. 79.

¹ Marked as adult near Haldensleben, Saxony, in the same year.

² Marked as a nestling near Halle, Saxony, in the previous year.

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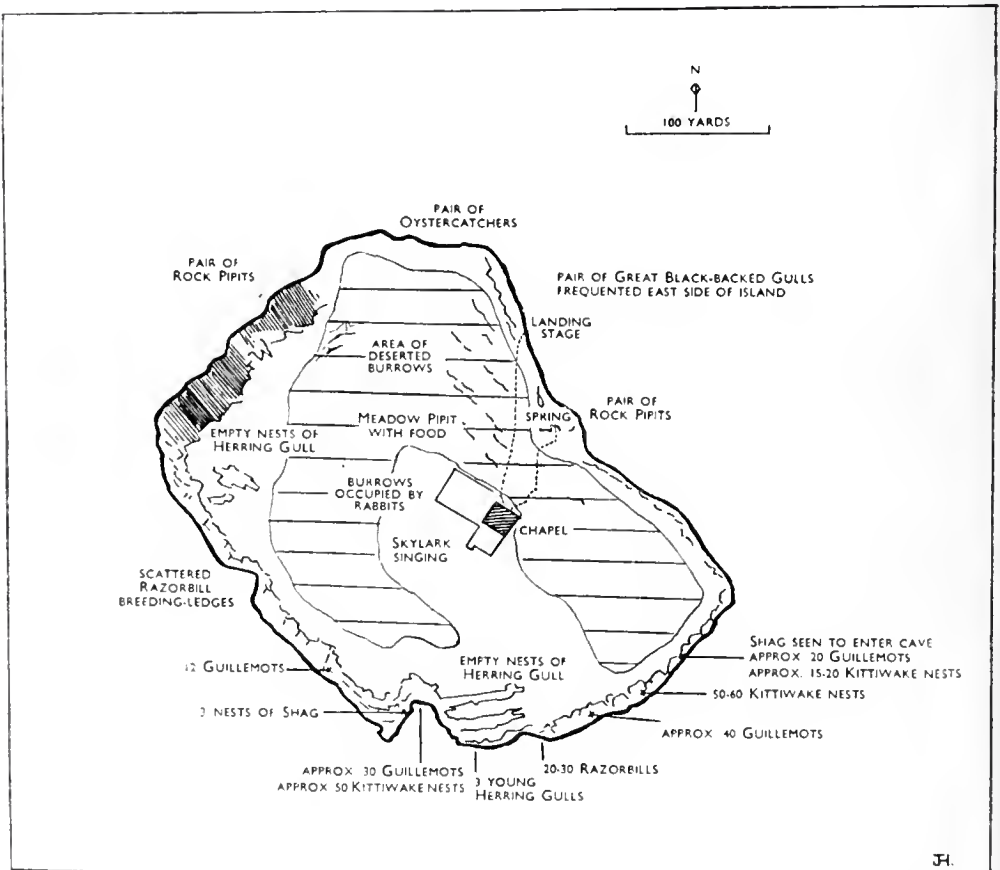
THE BIRDS OF THE ST. TUDWAL ISLANDS.

BY

R. F. THEARLE, J. T. HOBBS AND JAMES FISHER.

(Plate 27, left)

THE two St. Tudwal Islands lie in Cardigan Bay a mile off the east coast of the Llyn Peninsula of Caernarvonshire: their Ordovician rock is Arenig including Skiddaw slate, and has a thin covering of sandy turf. The West Island, some 400 × 75 yards, has a lighthouse which was abandoned in 1922. The East Island, known locally as "Bird Island", is about 400 × 300 yards, with a chapel and buildings last used in 1887. Both are surrounded by rather broken and confused cliffs, just reaching the hundred-foot contour in places. Nothing important, as far as we can find, has been published about St. Tudwal's birds since 1907 (H. E. Forrest); this paper is based on what there is in the literature and on three visits—by N. F. Ticehurst (personal communication) on June 19th and 21st, 1922, by J. F. and Miss Margery Turner on August 4th and 5th, 1935, and by R. F. T.,



MAP OF ST. TUDWAL EAST SHOWING BREEDING POPULATION IN JULY, 1951
(TOTALS FOR AUKS REFER TO NUMBERS OF EGGS OR YOUNG)

J. T. H. and D. R. Owen from July 9th to 11th, 1951. Ticehurst visited only East, but the other two parties went on both islands.

For the seasons 1879 to 1887 inclusive a committee appointed by the British Association for the Advancement of Science (Harvie-Brown and others, 1880-89) investigated bird migration by means of questionnaires to lighthouse-keepers. In five of these nine seasons the keepers of the light on St. Tudwal's West rendered information; for 1880, 1881 and January, 1882 (Keeper W. Davies to Philip M. C. Kermode), 1884 (W. Monk to William Eagle Clarke), 1885 (W. Davies to Eagle Clarke) and 1887 (Davies and another Keeper, Parsons, to Eagle Clarke). Kermode and Clarke were at different times members of the committee, responsible for the collation of material from the west coast of England and Wales. After 1887 later investigators, notably Coward (1895) and Aplin (1900, 1902, 1903, 1905a, 1905b) collected more information from the lightkeepers, and personal visits to one or both of the islands were made by E. W. H. Blagg in 1891 (Forrest, 1907, p. 390); Coward and C. Oldham on May 26th, 1893 (Coward, 1895); Aplin on June 23rd, 1899, May 19th, 1900 and May 29th, 1902 (Aplin, 1900, 1901, 1903), Forrest on June 13th, 1902, July 13th, 1903, and in May, 1907 (Forrest, 1907, pp. 252, 336, 401, 403) and W. J. Constable regularly in August in the years 1903-07 (Forrest, 1907, p. 403). No ornithologist appears to have visited the islands between 1907 and 1922, or between 1922 and 1935.

In all, 39 species have been certainly identified on or near St. Tudwal's Islands (we except such birds reported by the keepers as "small hawk", "wild geese" and "pigeons"). Of these 14 have been suspected of breeding, though only 11 have been proved to do, or have done, so. The other 25 are casual visitors, principally on migration or in winter. These non-breeders are:—

STORM PETREL (*Hydrobates pelagicus*). 4 seen on January 8th, 1882.

FULMAR (*Fulmarus glacialis*). One of the local fishermen in Abersoch told I. B. Smith that he had seen one near the islands twice in 1943 (Fisher *et al.*, 1946)—the Fulmar investigation has disclosed no further records.

GANNET (*Sula bassana*). 5 passed island on July 10th, 1951.

HERON (*Ardea cinerea*). Single birds on November 29th, 1884, January 23rd, 1885, August 21st, 1885.

MALLARD (*Anas platyrhynchos*), TEAL (*A. crecca*) and WIGEON (*A. penelope*). "Fond of passing the day on the larger (east) St. Tudwal's Island"—Aplin (1905).

PARTRIDGE (*Perdix perdix*). One March 14th, 1885.

GOLDEN PLOVER (*Charadrius apricarius*). 2 in January, 1882.

TURNSTONE (*Arenaria interpres*). 8 on May 29th, 1902, and previous record of one.

CURLEW (*Numenius arquata*). 100 on July 24th, 1885.

WHIMBREL (*N. phaeopus*). 2 in May, 1901.

COMMON SANDPIPER (*Actitis hypoleucos*). One in August, 1935.

PURPLE SANDPIPER (*Calidris maritima*). 5 on May 26th, 1893, 2 on May 14th of another year, one on May 19th, 1900, some about May 24th, 1901, many on East Island in winter 1902-03.

SWALLOW (*Hirundo rustica*). One on August 4th, 1935.

CARRION CROW (*Corvus corone*). Several on October 4th, 1884.

REDWING (*Turdus musicus*). Has struck lighthouse, especially on March 18th, 1904.

RING OUZEL (*Turdus torquatus*). One on September 14th, 1901.

BLACKBIRD (*Turdus merula*). Passage October, November, February, March.

ROBIN (*Erithacus rubecula*). One on October 14th, 1884.

GOLDCREST (*Regulus regulus*). Has struck lighthouse—Aplin (1903).

PIED OR WHITE WAGTAIL (*Motacilla alba*). 2 on October 10th, 1884.

STARLING (*Sturnus vulgaris*). More frequently struck, or flocked round, light than any other species on foggy nights when on passage—notable visitations on March 16th, 1902 and March 18th, 1904.

BULLFINCH (*Pyrrhula pyrrhula*). One on December 10th, 1887.

CHIAFFINCH (*Fringilla cœlebs*). One on October 21st, 1884.

The following species breed, have bred, or (marked by *) are suspected to have bred on the St. Tudwal Islands:—

*MANX SHEARWATER (*Puffinus puffinus*). The belief that the Manx Shearwater breeds on the St. Tudwal Islands (*vide, The Handbook, Vol. iv, p. 44*) appears to have been started by the late T. A. Coward (1895). In June, 1887, Coward and C. Oldham noticed a string of Manx Shearwaters flying towards the islands, and they were told in 1888 by the lightkeepers "that they heard them at night making a noise like a child sobbing in trouble". On May 26th, 1893, when they visited St. Tudwal's, they found a dead Shearwater on one of them, and the lightkeepers told them that "some weeks before some men had been catching rabbits on the islands, and had bolted several Shearwaters and killed them". However, Aplin, on June 23rd, 1899, was "unable to add anything of importance to what Mr. Coward has already recorded"; and he does not so much as mention Manx Shearwaters after his later visits. There was no evidence whatever of breeding in 1935, though Shearwaters were heard at night.

In 1951 on July 9th from 16.00 hours till dusk small numbers of Shearwaters were seen over the sea to the east of East, and at 23.45 hours some called while flying low over the island. The nights of July 9th–10th and 10th–11th were spent watching for Shearwaters, but none was seen to land or heard to crow from a burrow; up to 17 were seen at a time out to sea on July 10th, the greater numbers towards evening. Burrows on a suitable turf slope on the north-east side of East contained no animals except Brown Rats (*Rattus norvegicus*). There was no evidence of Shearwaters on West. Those seen near St. Tudwal's may well have come from Bardsey, 13 miles away, a known breeding-colony. There is thus no proof that the Manx Shearwater has ever bred on St. Tudwal's.

CORMORANT (*Phalacrocorax carbo*). On June 23rd, 1899, Aplin saw about 15 birds, adults and young, on the rocks and found empty nests. He saw Cormorants also in May, 1900, and on May 29th, 1902, saw some on East, but could not "make sure if this bird breeds on the cliff or not"; some light-bellied young were about. In June, 1922, Ticehurst saw a few birds on nests on East. On August 4th, 1935, 32 birds were present on West and on August 5th 4 on East. On July 9th, 1951, a flock of approximately 100 were resting on the rocks below West, but there was no proof that the species had bred there.

SHAG (*P. aristotelis*). Aplin found the Shag breeding in small numbers, presumably on West, in 1899; and he found at least 2 nests in 1900. Some were still on their nests on May 10th, 1902, and full-grown young were also present. Forrest found unhatched eggs on St. Tudwal's on July 3rd, 1903. In 1935 a few Shags, adult and young, were present. In 1951 a few were resting on the rocks below West on July 9th, and between 5 and 10 pairs were present from July 9th to 11th on East, where 3 nests were seen to contain large young on July 10th.

PEREGRINE (*Falco peregrinus*). Clutch of four laid on a St. Tudwal cliff in 1885, of which two eggs taken. Only an occasional visitor by 1900 (Aplin, 1901).

OSTERCATCHER (*Haematopus ostralegus*). Forrest found a clutch of four fresh eggs on June 13th, 1902. Ticehurst found 3 pairs nesting on East in June, 1922. In 1935, on West, there were 3 birds on August 4th, 13 on August 5th. In 1951 its status on West was unobserved, but there were 12 pairs on East.

GREAT BLACK-BACKED GULL (*Larus marinus*). In June, 1891, E. W. H. Blagg (Forrest, 1907, p. 390) found 2 pairs on St. Tudwal's, and Forrest says that it "has nested in former years" there. On May 19th, 1900, Aplin found no adult Great Black-backed Gulls, but evidence that the immature birds present had eaten Puffins. Ticehurst saw a pair on East on June 19th, 1922, but none was present two days later. None was seen in 1935; on July 10th, 1951, a pair frequented the east side of East, but there was no sign of breeding on West: indeed there is no valid evidence of breeding on St. Tudwal's in the present century.

HERRING GULL (*Larus argentatus*). Aplin found at least one nest on May 19th, 1900. A Herring Gull took a Guillemot's egg during his visit on May 29th, 1902, but he does not mention breeding in that year. There were 10 pairs nesting on East in June, 1922, when Ticehurst visited the island. In 1935 the situation was only studied on West, where on August 4th there were 80 birds, including 15 young. In 1951 it appears that few pairs bred on West where a few well-fledged young were seen on July 9th, and there were about 50 pairs on East, where there were shells of sucked eggs in the Brown Rat burrows.

KITTIWAKE (*Rissa tridactyla*). After his visits (1899, 1900, 1902) Aplin told Forrest that the Kittiwake was "frequent on St. Tudwal's, but does not breed there". The species appears thoroughly to have established itself on East by 1935, for 354 birds, including between 52 and 62 young, were counted on August 5th. In 1951, on July 10th, between 100 and 140 pairs of Kittiwakes nested at three points on the south coast of East (see map). The Kittiwake does not breed on West.

RAZORBILL (*Alca torda*). The first mention of St. Tudwal's as a Razorbill station is a record of Keeper W. Davies in 1885 that "hundreds" arrived on April 14th and departed on August 14th. A few Razorbills bred on St. Tudwal's in 1899, according to Aplin, and he found one sitting on May 19th, 1900, and "a good many eggs" on May 29th, 1902, the birds having arrived on March 10th. A few were seen by Ticehurst on East in June, 1922. The colony appears to be confined to East, where there were 30-40 scattered birds in 1951. (Only one bird was seen on August 5th, 1935, but on this date nearly all breeders have taken their young to sea.)

GUILLEMOT (*Uria aalge*). Like the Razorbill, first recognised as a breeder by W. Davies in 1885. 200 arrived at sunrise on March 12th, "hundreds" more on April 14th, and also like the Razorbills, the Guillemots departed on August 14th. Aplin found Guillemots breeding in 1900 and "a good many eggs" on May 2nd, 1902, the birds having arrived on March 10th with the Razorbills. In June, 1922, Ticehurst saw a few pairs on East. In 1935 on the late date of August 4th only 3 birds were seen on East and none on West; but in 1951 a group of 10-20 birds was seen on July 9th on a ledge of West; on East on July 10th R. F. T. and J. T. H. estimated just over 100 birds on the ledges. No bridled bird was seen.

PUFFIN (*Fratercula arctica*). The St. Tudwal's Islands until recently had the largest Puffin colony in North Wales; it seems to have been consistently larger, judging from the accounts in the literature, than that on Puffin Island or Priestholm in Anglesey. The St. Tudwal's colony was first alluded to by Bingley (1800), who visited it in 1798: it was then exploited for food.

Lightkeeper W. Davies noted the arrival and departure of the Puffins in the 'eighties; thus in 1885 they arrived with the other auks on April 14th and departed on August 14th; in 1887 about 50 arrived on March 31st and "hundreds" on April 29th, and they left the island on August 12th.

After his first visit, on June 23rd, 1890, Aplin wrote: "Swarms of Puffins inhabit St. Tudwal's Island. As you approach the island you pass through great numbers scattered over the sea, and they sit in masses on the land; the

turf in places is riddled with their holes, and the air is full of birds coming and going. Towards dusk many more come in from distant feeding grounds." The lightkeepers told him they arrived on about March 28th or 29th, were in full force round the islands at the latter end of April, finally came in to their burrows on about May 10th and mostly departed on about August 15th (late breeders a fortnight later). Aplin found hard-set eggs and some just-hatched young on June 23rd, 1899. In 1900, Aplin records that Puffins were very late in coming to land at St. Tudwal's. On May 17th, he "could see them, with a glass, sitting as thick as flies on parts of St. Tudwal's Island, but they had only that day returned to the island, having been away for five days because of the bad weather". On his visit on May 19th Aplin found the Puffins "very busy", but no eggs. They shared many burrows with rabbits. In 1902 Aplin was told that the Puffins had not arrived (? on the sea round the islands) by April 1st.

Forrest, who visited the islands in 1902, 1903 and 1907, found the Puffins "so numerous that they cannot be estimated, but they probably number some hundreds of thousands The nest-burrows occur all over the islands, but are principally crowded together in a belt twenty to forty yards wide stretching all round the coast just above the cliffs; here the ground is literally riddled by the holes." He found "a large proportion" of eggs still unhatched on July 13th, 1903; his informant, S. G. Cummings, found fresh eggs in late June, and W. J. Constable, on many visits in August 1903-07, found (after August 4th) "many still feeding young, others sitting on eggs, and others with newly-hatched young". It was the end of August before the last left. Of its status in June, 1922, Ticehurst says: "Some thousands of pairs no count possible, nesting on practically the whole of the island."

In 1935, on August 4th, J. F. and M. T. estimated that there were between ten and twenty thousand puffin-holes on both islands together, by no means all of which were in use. Large rafts of Puffins floated on the surrounding sea in the evening, and many were still feeding young in the burrows. Compared with Forrest's "hundreds of thousands" there were few, and the colony had probably much decreased; but it was still a large one. There were plenty of rabbits on both islands in 1935, but no rats.

In 1951 the situation was quite different. R. F. T. and J. T. H. saw no Puffins whatever flying near or landing on either island, though a raft of 200-300 adults was present on the sea about 400 yards off the east coast of East from July 9th to 11th, the period of their stay. The burrows they excavated on East in search of Shearwaters and Puffins contained shells of the eggs of Herring Gulls, Razorbills and Guillemots, rat faeces, much litter and rats' nests. One Guillemot egg was stored intact in a burrow at least 100 yards from the cliffs. Apart from the rats the only other mammals seen on East were a black Rabbit (*Oryctolagus cuniculus*) and a flock of 23 sheep which had been put ashore in May, 1951.

A local fisherman told R. F. T. and J. T. H. that the rats reached East in 1949 among the roots of some trees; but this cannot be substantiated. The fisherman also said that the rabbits were very numerous until the arrival of the rats. The decrease in the rabbits is confirmed by Williams-Ellis (1951). There was no evidence of any rats on West, which has also evidently been deserted by the Puffins.

To conclude, the Puffin has ceased to breed on St. Tudwal's, once the largest colony in North Wales. The evidence suggests that the birds may have been finally wiped out by rats, though a substantial decrease took place before the rats came. That rats can quickly reduce a Puffin colony is well-known from the history of the other great station of North Wales, Puffin Island, which took many years to recover from a rat infestation derived from a shipwreck in 1816 or 1817 (Price, c. 1875, p. 100; Forrest, 1907, pp. 400-01). In 1880, Brown Rats got ashore on what was then a still great Puffin colony, Ailsa Craig in the Clyde. The consequent decrease of this colony, described by Gibson (1951) and Fisher and Lockley (in press) became noticeable by 1910,

and was the subject of a Question in Parliament in 1924. By 1947, Gibson could find only 30 birds on the whole island, though he estimated c. 246 pairs in 1950.

These Puffin decreases cannot wholly be attributed to rats,† for it is now quite clear that all the British breeding auks have been also reduced in population by oiling. But rats are exceptional predators in that they often appear seriously to reduce the numbers of the prey upon which they themselves must depend.

*SKYLARK (*Alauda arvensis*). One was killed at the light on February 28th, 1887. In 1951, the species did not breed on West, but a pair was present, possibly breeding, on East.

*MEADOW PIPIT (*Anthus pratensis*). In 1951, one or more pairs had probably bred on West and a pair was present on East, carrying food.

ROCK PIPIT (*Anthus spinoletta*). May possibly winter, according to light-keepers (January, 1882). Ticehurst found them numerous on East in June, 1922. In 1935, 13 birds including 2 young on West, 4 birds on East; in 1951 one or more pairs had probably bred West, 2 pairs East.

SUMMARY.

The bird records of the St. Tudwal Islands in Cardigan Bay, Caernarvonshire, are summarized. 25 species are known as casual visitors or passers-by. 11 species have bred. 3 further species have been suspected, but not proved, to have bred. In particular there is no evidence that the Manx Shearwater has ever bred on the islands. The Puffin colony, once probably the largest in North Wales, is now extinct. The recent invasion of one of the two islands by Brown Rats is one of the causes of this.

ACKNOWLEDGEMENTS.

We are grateful to Mr. W. B. Alexander and Dr. Bruce Campbell, who read a first draft of this paper and made a number of helpful suggestions; to Mr. and Mrs. C. F. Tunnicliffe for their assistance locally; and particularly to the owner of the islands, Major Clough Williams-Ellis, for permission for our parties to visit and stay on them.

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†On the rat-infested Shiant Islands, in the Minch, which J. F. visited in 1947, the Puffin colony is still huge, though obviously (from their account) not so vast as when Harvie-Brown and Buckley (1888) saw it in 1887.

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NOTES.

Terek Sandpiper in Co. Durham.—On September 27th, 1952, I saw a Terek Sandpiper (*Xenus cinereus*) on Cowpen Marsh, Teesmouth, Co Durham. It was on the mud bordering a flash behind the sea-wall originally with a substantial flock of Redshank (*Tringa totanus*) and Grey Plover (*Squatarola squatarola*), most of which flew off leaving it with three Dunlin (*Calidris alpina*) and two Grey Plover. It spent most of its time asleep with its bill completely buried in its scapulars, so I was able to take up a position some 35 yards away and to watch it for about three-quarters of an hour. Thus asleep it appeared to be the size of a Dunlin, but when alert, it was taller and more slender than that species with conspicuous white under-parts and long upturned bill. When moving, it hopped mainly on one leg, but later produced another and ran quickly along the shore. It never entered the water, as did the Dunlin, and only once did it "bob" as a Common Sandpiper (*Actitis hypoleucos*) so frequently does. It once crouched low when alarmed.

It was seen again on September 28th, some two hundred yards from its original position, on a small patch of mud in the same flash. The following description was taken in the field:

Upper-parts rather pale brown, slightly darker towards the tail, with some black marks noticeable when seen from behind. The folded wing was outlined in black as were the sides of the tail. There were light edgings to some feathers, but the general impression of the back and wings was one of a uniform light brown. Sides and back of neck, head, lighter and slightly mottled brown. Two narrow white stripes from just above and just below eye level from eye to base of bill. Under-parts conspicuously white except for a little brown flecking on the throat. Axillaries and most of under-wing white. In flight the hind portion of the wings was white, and the tail appeared wholly off-white. The bill was black, long and uptilted, while the legs were bright yellow orange. Call both in flight and when disturbed on the ground a disyllabic "quee-quee" with a suggestion of a Dunlin-like quaver.

P. EVANS.

Sabine's Gull in Somerset.—Messrs. P. J. Chadwick, Bernard King H. R. H. Lanee, W. L. Roseveare and D. E. Slocombe have written to record that on September 28th, 1952, they saw an immature Sabine's Gull (*Xema sabini*) at Steart Point, Somerset. They describe it as having a tern-like flight with wing-beats slower than those of the Black-headed Gulls (*Larus ridibundus*) seen at the same time. It appeared a little smaller than the latter species and the primaries formed a black patch to the carpal joint, contrasted with a conspicuous, white, triangular area on the secondaries. The tail was white and forked, with a dark terminal band. Its forehead was white, and the crown, nape, mantle, back and rump brownish-grey, finely barred grey-brown on the lower back; the under-parts white. The black bill was slightly decurved and it was particularly noted that the legs were distinctly pale grey—and not "dusky-grey" as described in *The Handbook*.

This bird was seen many times during the next few days at Steart, and it is presumed that it was the same individual that Mr. D. H. Perrett saw on the River Parrett near Bridgwater on October 4th. On October 5th—the last recorded date—it was seen flying towards Burnham by Messrs. A. V. Cornish and H. J. Craske. On this occasion its flight was noticeably peculiar—it was proceeding along the opposite bank, not above the water, and every few yards it would sweep steeply upwards in a tight curve, then making a backward loop down again, "rather like the action of a Black Tern (*Chlidonias niger*) in reverse". It continued in this way for the whole time it was in sight, a distance of about three-quarters of a mile.

This is the second record of this species in Somerset this century (*cf.*, *antea*, vol. xlv, p. 254).

Short-toed Lark in Pembrokeshire.—On April 9th, 1952, a Short-toed Lark (*Calandrella brachydactyla*) was seen on Skokholm, Pembs. The first impression gained was of a small reddish-brown lark, about the size of a Meadow Pipit (*Anthus pratensis*). At a range of 20-30 yards the crown of the head appeared to be a uniform light reddish-brown. The superciliary stripe, which was a paler chestnut-fawn, was very pronounced, particularly over the ear coverts, which were darker, but not so dark as the crown. The contrast between the superciliary stripe and the darker crown gave the bird a capped appearance. The side and back of neck appeared slightly greyer than the head. The warm buff, which was pronounced on the sides of the breast, seemed to form a shallow V-shaped gorget across the breast.

On April 10th, in better conditions, it was possible to see that on the crown of the head there were, in fact, some small darker brown streaks. The pattern of the wing-coverts was also fairly pronounced, the area of the median coverts being a dark brown with pale edge giving the impression of a broad, dark wing-bar

above a paler one. The centres of the greater coverts were also dark brown (though not so dark as the median coverts) with pale tips to the greater coverts which showed up as another thinner, pale wing bar. The broad chestnut edges to the central tail-feathers were also conspicuous.

The flight was undulating, rather more jerky than that of a Sky-lark (*Alauda arvensis*). The flight notes were also reminiscent of the Skylark, but the trills were rather shorter and harsher; once or twice the bird was heard to utter a "wit" note. It appeared very tame and exhausted on both days. On the 10th, two pull nets were set and after a little careful driving the bird was caught and the identity confirmed.

This individual did not agree in general colouration with the field description in *The Handbook* where it is described as "a small, rather pale, sandy-looking lark with under-parts nearly white". Under sunny conditions the Skokholm bird was very reddish-brown—much more so than a Meadow Pipit. In other respects, however, our observations agree with those of *The Handbook*. The brown mark on the side of the neck was seen, but only when the bird stretched up its head.

This would seem to be the first record of the Short-toed Lark for Wales.

P. J. CONDER.

[A laboratory description which fully confirms the identification and a list of 10 other observers who saw the bird have also been supplied.—EDS.]

Paper-tearing by tits.—With reference to the paper on this subject (*antea* pp. 16-21) by Lt.-Col. W. M. Logan Home, it is interesting to note a much earlier record of the habit which was quoted in a letter to *The Times* (published February 2nd, 1953) by Sir Owen Morshead. In this letter he says: "As early as 1693 Father Jean Imberdis, S.J., published a poem called "Papyrus" about the process of paper making, and these lines may be quoted in Professor Eric Laughton's recent translation:

Small is this naughty Fowl, yet it can wreak
 No small Destruction with its claws and beak.
 For, when the Paper from afar it spies,
 Straightway though open Window in it flies.
 Its frequent blows the Sheet do quickly tear
 Still sodden, and make Havoc everywhere. . . .
 To Gin and Snare it grows too soon inured,
 And Carelessness is by Experience cured.
 The Lime untouched, always the saucy Tit,
 So keen its zest, to Paper straight will flit."

The original poem was in Latin and the quotation was taken from a book limited to 200 copies and printed in Holland in November, 1952, for a small society, by name "The Paper Publications Society".

Unusual nesting-site of Dipper.—We have received various reports referring to Mr. T. B. Mason's note (*antea*, pp. 35-36) about a nest in Yorkshire built by a pair of Dippers (*Cinclus cinclus*) on the top of an isolated boulder well out in mid-stream. Major R. F. Ruttledge points out that Ussher (*Birds of Ireland*, 1900, p. 28) did in fact record only *one* instance of such a nest, and not several as the wording in *The Handbook* can be interpreted to mean. Major Ruttledge adds that, although he himself has never seen such a site used in Ireland, the Rev. P. G. Kennedy has three times come across similar examples. Mr. John Armitage writes to say that he has seen two nests on limestone boulders in the Derbyshire Lathkill in May, 1925, and in April, 1927 (in each a brood was reared), the only difference being that at both places the river was much wider than Goredale Beck. Mr. G. C. S. Ingram says that he has on several occasions seen or heard of such sites and remarks that Richard Kearton published in 1903 a photograph and description of an almost exactly similar nest (*Wild Nature's Ways*, pp. 21-22). It seems probable that on boulder-strewn, open streams the Dipper may build a nest on the top of a rock more frequently than the published records suggest.

Olivaceous Warbler in Pembrokeshire.—An Olivaceous Warbler (*Hippolais pallida*) was caught in a trammel-net on September 23rd, 1951, on Skokholm Island, Pembrokeshire. It remained on the island until the Observatory was closed on October 3rd. On September 23rd it was watched in the South Haven bracken for about 90 minutes, and the field-description which follows has been compiled from the notes of W. G. Bridges, David Boddington, P. J. Conder, Margaret Dun and John Peake. Superficially it resembled a Garden Warbler (*Sylvia borin*), but was rather smaller. The upper-parts were a pale uniform grey-brown, with tail and wings slightly darker. The under-parts were a pale greyish-white, except for the chin and throat and under tail-coverts which, in the sunlight, appeared pale greenish-yellow. At about 10 yards, also in the sunlight, it was possible with binoculars to see the pale yellowish-green lores and a superciliary stripe which extended a short distance behind the eye. The pale brown bill was obviously large, and the fact that it was broad at the base was noticed at close quarters. The legs appeared bluish-grey. Under more cloudy conditions later in the day the yellowness of the chin and throat was not so noticeable, and the bluishness of the legs not so pronounced.

On examination in the hand this bird was judged to be an adult. At 1300 hours B.S.T. on September 23rd its weight was 12.3 grammes. The wing measured 66.0 mm. when in natural curve, and 67.0 mm. when straightened. The first primary was 8.0 mm. longer than the primary-coverts; the second primary was 3.0 mm. shorter than the third and fourth, which were equal and the

longest; the fifth was 1.5 mm. shorter than the third and fourth; the sixth was 2.5 mm. shorter and the seventh 3.0 mm. shorter. The wing-formula can be seen in the photograph (plate 27, right) showing the spread wing and tail of this bird. The photograph also illustrates quite well another character of the species—the outer tail-feathers shorter than the others.

During the first day or two on the island the bird was not shy, perhaps because it was tired, and occasionally it allowed observers to approach within two yards. It perched very often on the top of the bracken, where its habit of raising its crown and nape feathers was easily and frequently observed. After it had been about a week on the island, however, it was less easily approachable. It was heard by W. G. Bridges to use a note similar to the “churr” of a Whitethroat (*Sylvia communis*), but shorter and harsher. During the later days of its stay on the island it was more frequently heard to call “yilp”, a sound very similar to a call of the House Sparrow (*Passer domesticus*), although quieter and higher pitched. P. J. CONDER.

[We have also received a detailed laboratory description of this bird which fully confirms the identification. This record was briefly mentioned last year (*antea*, vol. xlv, p. 244), but fuller details are given here in view of its great rarity.—EDS.]

REVIEW: COUNTY BIRD REPORT.

North Staffordshire Field Club, Annual Report, 1951-52. Edited by H. V. Thompson.

A short report on birds includes notes on duck on Copmere in 1951. Goosanders were present in some numbers from January to March and from November to December, the maxima being 32 on March 18th and 44 on December 30th. Six Smews were seen there in February. As in other counties in this part of England, Nuthatches continue to increase in number, and the Curlew to extend its range. A.W.B.

LETTER.

FLOOD-DAMAGE AT HAVERGATE ISLAND.

To the Editors of BRITISH BIRDS.

SIRS,—One of our most important bird-reserves, Havergate Island, Suffolk, was severely damaged by the exceptional tide which swept down the East Anglian coast on February 1st. This island is not only unique in that it contains the only British breeding-colony of Avocets, but it is a sanctuary for many other birds, including many species of ducks, waders and terns.

In these small and heavily populated Islands wild-life reserves must obviously be limited. Those that do exist are, therefore, of vital importance for future conservation. At Havergate we have managed to carry out temporary repairs, at a cost of about £200, which should make the island secure for this breeding-season. In the autumn we are faced with the task of restoring to complete soundness the protective sea-walls, which were breached in twenty-six places. This will cost us several thousand pounds.

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BRITISH BIRDS

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THE REACTIONS OF SOME NESTING PASSERINES TOWARDS LIVE AND STUFFED JAYS.

BY

DEREK GOODWIN.

THE Jay (*Garrulus glandarius*) is well-known to feed on the eggs and young of smaller birds. Indeed its behaviour in this connection is a source of much adverse comment and fantastic exaggeration. In the course of my observations of this species I have seen a certain amount of such predation and the victims' reactions to it. I have also made a few experiments with a stuffed Jay placed near nests containing eggs or young. Where possible a stuffed Stock Dove (*Columba ænas*) has been used first as a control. Most of these observations were made in 1949 with Mr. John Ash to whom I am much indebted. The more detailed experiments with Willow Warblers (*Phylloscopus trochilus*) conducted by Edwards *et al.* (1950) have shown that reactions to predators may vary greatly in correlation with the stage of the breeding-cycle. There are also of course individual differences. Since, however, the behaviour shown towards a particular predator by any one species—at least within the same geographical area—is almost always essentially the same in kind, differing only in degree of intensity, or the interaction of attacking and escaping impulses (anger and fear) it seems worth recording even when only one or a few pairs of a species have been involved.

WOODLARK (*Lullula arborea*).

The stuffed Stock Dove was placed about three feet away from a nest with young about ten days old. When the parents returned they alighted at some distance from the nest and walked to it by a somewhat roundabout route in their usual manner. The foremost bird did not notice the dove, which was in full view, until it was barely three feet away. It jumped up with a start (?incipient fleeing) then resettled, was at first a little nervous, but after a few seconds hesitation approached and fed the young. The second bird, which owing to its mate's behaviour first noticed the dummy when several yards from it, showed only very slight signs of nervousness and fed the young without any appreciable hesitation.

Whilst the parents were away gathering food (they flew off to some distance) the stuffed Jay was substituted for the Stock Dove. At the second that it caught sight of the dummy each Woodlark

literally collapsed into distraction display and started to drag itself over the ground (appearing as if it had lost the use of its legs) with tail spread and depressed and wings spread open and fluttering against the earth. They displayed in this manner all around the Jay, often approaching to within a foot of it. This was kept up for about eight minutes, the birds sometimes breaking off and adopting normal posture for a second or two, but displaying most of the time. I then approached to take away the dummy. On seeing me one bird flew off, but the other, in normal posture, ran towards me, looked up into my face and then recommenced its distraction display. I pretended to chase it and it led me for about thirty yards, "getting better" as we drew away from the nest, until it finally fluttered into the air and then flew strongly away. Except for the depression of the tail this distraction display would appear to have been homologous with that observed by Edwards (1949) to a stuffed Cuckoo (*Cuculus canorus*).

The stuffed Jay was placed close to a second nest containing fully feathered young that appeared ready to leave. The (?) female came down and walked around a few yards distant in a nervous and uneasy manner, but showed no signs of any distraction display. Presumably she uttered some call inaudible to the human observers—who were at a little distance—for the young suddenly ran from the nest, each running actively for several yards and then crouching and freezing.

MISTLE THRUSH (*Turdus viscivorus*).

This bird, as is well-known, is extremely aggressive. In the breeding-season it habitually attacks Jays, even at times when they are as much as a hundred yards from its nest-site. The stuffed Jay (not a very life-like specimen) was tried at two nests containing well-grown young. In each case the parents (at one nest only one bird appeared during the minute or so that the dummy was left in position) attacked fiercely the moment they saw the Jay. At one nest the parent came and fed the young without noticing the dummy which was only a foot away and in full view. The subsequent behaviour of this bird showed clearly that this was because it had not seen the stuffed Jay on the first visit. This is not the first example I have witnessed of the fact that birds, like humans, often fail to "notice" some object which is plainly visible if they are "not expecting to see it", and provided that it does not attract their attention by movement.

SONG THRUSH (*Turdus ericetorum*).

From casual observations I have the impression that this species is, when breeding, particularly "sensitive" to the appearance of a Jay. Although in the vicinity of my garden the Blackbird (*T. merula*) is much the commoner species it is usually

the Song Thrush's alarm chatter that first rings out when a nest-seeking Jay appears. If the latter goes near its nest or young the Song Thrush frequently presses its attacks home, striking at its enemy with great boldness.

The stuffed Jay was tried at two nests with small young and at three with young from seven to nine days old. In every instance but one it was attacked as soon as the parents caught sight of it. At one nest with small young, however, neither parent showed any reaction to the stuffed Jay, both fed the young, and then the (presumed) female quietly brooded them. A week later, when the experiment was repeated, both parents instantly attacked the dummy, knocking it down and tearing off a wing in a few seconds. Edward's (1950) careful experiments on the reaction of the Willow Warbler to dummy Cuckoos has shown how greatly a species' reaction to some specific nest-enemy may vary according to the stage of the breeding-cycle. It is, however, most unlikely that the behaviour of these parent Song Thrushes had reference to the age of their young, which were equally vulnerable in each case. Two possible explanations are that either they failed to "notice" the dummy, perhaps as a result of our previous intrusion having centred their attention on us (although we were at a distance and they did not seem to be regarding us) or that they did not "take in" the difference between the second dummy and the stuffed Stock Dove which had been first presented.

BLACKBIRD (*Turdus merula*).

Blackbirds react to Jays in much the same way as Song Thrushes do. On average I think they are rather less bold in pressing home attacks, although some individuals strike repeatedly and I have twice seen a Blackbird (once a male and once a female) grapple a Jay and fall with it from the hedge-top to the ground before breaking away.

The dummy was tried at several nests with young of different ages and at two nests with eggs. At every nest with young it was attacked. Where there was a difference in the degree of aggressiveness shown the male was always the bolder. At two nests the female made only an occasional half-hearted strike at the dummy whereas the male attacked it vigorously. At one nest with well-grown young only the male appeared, although at this nest the dummy was tried on many occasions over a three day period. Possibly the female was engaged on a second brood or had been killed.

At one nest with eggs, the hen attacked the dummy Jay when it was placed a foot from the nest, but when it was placed six feet away she merely mobbed it, occasionally making as if to fly at it but not pressing the attack home. At the second nest with eggs both birds of the pair flew low over the dummy and then

hopped about uneasily a few yards away from it, but they did not utter the alarm notes or make any attempt at attack. This particular pair was in a garden in South Kensington which is only occasionally visited by Jays, and their behaviour suggests the possibility that the normal reaction to Jays shown by breeding thrushes (*Turdus* sp.) may not be innate. The dummy Stock Dove was tried at the first nest with eggs and was ignored by the female on her return. At one nest with young the male (who alone seemed to be caring for them) attacked a stuffed Barbary Dove (*Streptopelia risoria*) with equal fierceness. This dummy was used after several predatory bird dummies and these had probably conditioned this male to show a hostile reaction to anything in that particular situation. I have never seen Blackbirds interfering with my live Barbary Doves, but they have been recorded (Hofstetter, 1952) attacking wild Collared Turtle Doves (*S. decaocto*) in Germany.

WHITETHROAT (*Sylvia communis*).

Only one trial was made, at a nest with four young about three days old. Both parents (which had fiercely attacked a stuffed Cuckoo) mobbed the Jay with a drawn-out nasal version of the usual scolding note. They did not approach nearer than about three feet and were clearly afraid of it. After about half a minute, however, the female vanished into the cover and when I went to remove the dummy I found she had returned to the nest through the cover of the nettles and was brooding the young.

WARBLERS (*Phylloscopus* sp.).

The dummy Jay was tried at two nests each of Chiffchaff (*P. collybita*) and Wood Warbler (*P. sibilatrix*), and several of Willow Warblers (*P. trochilus*). In all cases the response was similar. The birds showed great uneasiness, gave the "hooet" note and in some instances approached to within a foot of the dummy, but made no attempt to attack it. If a Cuckoo was substituted for the Jay the leaf warblers' behaviour immediately changed to actual or incipient attack, accompanied by the chattering note and wing-fluttering. With one male Wood Warbler, which fearlessly attacked a dummy Cuckoo held in the hand, the Jay and Cuckoo dummies were interchanged about a dozen times in the space of a few minutes, yet the warbler's behaviour "switched over" instantly each time without a second's hesitation.

DUNNOCK (*Prunella modularis*).

The Jay was tried at two nests with eggs. At each the parent showed signs of alarm, but remained silent and would approach closely to neither nest nor dummy until the latter had been removed. The Stock Dove dummy was tried at one nest a few days after. The parent showed no fear of it, and incubated peace-

fully in its presence. I. J. Ferguson-Lees (personal communication) has watched 32 approaches by Jays to 3 separate nests (with young) of this species and on every occasion the brooding (female) Dunnock has "flounced with whirring wings" straight off the nest and out through the surrounding foliage. Then, on those occasions when the Jay has remained near the nest, it has sometimes been possible to see one or both adult Dunnocks moving slowly about in the hedge, no nearer than 3 yards and in complete silence, not even uttering the low, inward warble that is sometimes used (in place of the "alarm-note") when a human is at the nest. After the Jay has been frightened away, the female has not returned to the nest until at least 6 (and at most 13) minutes have elapsed, but as the normal absences may be longer, these times may have little significance. On one occasion a male, however, returned to feed the young 45 seconds after the Jay's departure. Ferguson-Lees adds that Dunnocks are not usually unduly concerned at the presence in the nest-hedge of such birds as Blackbirds and Starlings (*Sturnus vulgaris*) unless one of them approaches closely in which case the brooding Dunnock will fly at the intruder.

RED-BACKED SHRIKE (*Lanius collurio*).

The first trial was made at a nest with young about five days old. A stuffed Barbary Dove was placed on the bush about two feet above and a foot to one side of the nest. The female shrike soon returned and seemed at first confused and puzzled rather than alarmed. She alighted near the dove, flew to a perch some yards away and back again several times, before making a sudden dive at the dummy and knocking it down. She gave no calls, did not seem much alarmed and the male did not appear. The dove was then removed and the stuffed Jay put in its place. The male shrike at once returned (? by chance) and both parents attacked the dummy vigorously. Whilst actually attacking they uttered a note which I wrote in my note-book as a "long-drawn nasal squealing", possibly this is the same, or similar to, the "harsh churring note" that Edwards (1949) records from a pair attacking a dummy Cuckoo. When perching (momentarily) between attacks they uttered the usual "chacking" alarm notes. When a stuffed dove, a Jay and a Cuckoo were placed equidistant from each other and the nest, the Jay and the Cuckoo were attacked with equal fierceness, but the dove was ignored.

A second pair in an adjacent territory, whose young had left the nest, behaved in a similar manner when the dummies were placed on a bush in which one of the fledgelings was hiding. They did, indeed, make one or two mild attacks on the dove, but struck it far less often and less vigorously than they did the Jay and the Cuckoo. When given a choice between the dove immediately above their young one and the Jay some twelve feet away they

continued to attack the latter far more intensely. A detached folded wing of the Jay was then placed on the bush (the rest of the dummy being removed) where it was attacked fiercely whilst the complete dove was almost ignored. During this commotion the male of the previously described pair was attracted to the scene. He showed brief "sympathetic" alarm, but, in contrast to his behaviour a few minutes previously when his own interests had been threatened, made no attempts to join in the attacks and soon flew back to his own territory.

CHAFFINCH (*Fringilla cœlebs*).

This species mobs live Jays that come near its nest, and usually shows clear signs of incipient attack. I have never seen it actually strike at a live Jay, but I once saw a female (that presumably had young near, though I failed to find them) repeatedly peck a Grey Squirrel (*Sciurus carolinensis*) on the head every time the latter attempted to descend the trunk of a sapling in the top fork of which it was sitting. After several vain efforts to descend the squirrel was forced to give up the attempt, and jumped into an overhanging oak.

A dummy Jay was placed at two nests with small young and one with eggs. In each case it was mobbed and at one of the nests with young the male bird swooped and struck it several times.

DISCUSSION.

In the above experiments, as with most others of a similar nature, it must be borne in mind that even if the dummy is initially recognised as (or rather mistaken for) a live predator its subsequent behaviour is completely unnatural. It neither flees nor defends itself when attacked, and such lack of response is likely to provoke more intense aggression from its attackers. Still it is fair to assume that a bird whose *initial* reaction is to attack the dummy would treat a live predator the same way if given the opportunity. The experiments suggested that with the possible exception of the Chaffinch, none of the small birds investigated risks contact with a Jay. This is understandable, since if one of these species were seized it would almost certainly be destroyed. On the other hand the thrushes (*Turdus* sp.) frequently attack (as distinct from merely mobbing) live Jays. When doing so they try to attack from behind and avoid being seized, but if they are grappled by the Jay they usually (in every instance that I have seen) manage to tear themselves free and escape without serious injury. From the point of view of the welfare of the species there can be little doubt that one mature, experienced bird is of inestimably more value than a brood of young. Hence one would expect to find, as in the above instances one does find, that parent birds do not normally take any defensive action that involves great personal risk when their young are threatened.

The Jay's response, or lack of it, to such mobbing or attack will of course vary according to its age, experience, degree of eagerness for food, etc., and the human watcher can seldom do more than guess at these factors. The Jay usually shows no concern whatsoever at mere mobbing, appearing to realise quite well that the noisy protests are directed at itself, although under most other conditions it would react to the sound of the same alarm notes (Goodwin, 1951). Actual attack may deflect the Jay and cause it to move away from the defended area, thus losing all chance of stumbling on the nest. At other times, however, particularly with adult Jays collecting food for well-grown young, the Jay dodges or parries every attack, but continues to search the area in a determined manner. Indeed I am inclined to think that some old and experienced Jays correlate such attacks with the probability of booty and are stimulated to more intensive searching rather than repelled thereby. At such times the Jay often appears to be definitely searching for nests, as distinct from generalised searching for any kind of food. Probably this occurs immediately after one or two chance finds of a nest with young. There is much evidence that a predator that has by chance caught a satisfactory prey tends to search near by for another like it, and de Ruiter's experiments (1952) have proved this to be the case with captive Jays.

Occasionally, instead of merely contenting itself with defence, a Jay will counter-attack vigorously. I suspect that this occurs when it has either seen the nest or realises that there is one near by. Then, from the Jay's viewpoint, the situation changes from "thrush making an unprovoked attack" to "thrush trying to rob me of my food" and naturally arouses aggressive feeling. Outside the breeding-season, when there is normally no overt hostility between Jays and thrushes, I have more than once seen a Jay make a furious attack on a Blackbird that, in all innocence, started to dig for food in the immediate vicinity of a buried acorn. Such very little evidence as I have suggests that if a Jay, or any other predator, has managed to obtain an egg or nestling from a nest it will make repeated and determined efforts to obtain the others. On June 8th, 1952, Ferguson-Lees (personal communication) watched a Jay return to a Dunnock's nest a total of 18 times during two periods of 4 and 5 hours. Normally a shout frightened it away, but on two occasions it succeeded in snatching a nestling. That night a "cage" of wire-netting with sufficiently large mesh to allow the passage of the Dunnocks was placed over the nest. During the 18½ hours this nest was watched between June 10th and 16th (when the young left) the Jay approached the nest on another 11 occasions, each time moving slowly once or twice right round the "cage" without attempting to force a way in, but peering continually at the nestlings.

Another Dunnock's nest in the same hedge from which the Jay removed all 3 young on June 8th, 1952, was revisited by the Jay twice in two hours on the following day. Both times it deviated from its course along the hedge to approach and look into the nest. On June 12th it removed within 3 hours a clutch of House Sparrow's (*Passer domesticus*) eggs that had been placed in this Dunnock's nest. On the other hand, a third nest of this species, where Ferguson-Lees frightened off the Jay when it was still some 4 yards away, remained untouched and 3 young flew successfully from it, which suggests that the same hedge or bush is only frequently revisited by Jays when they have already found a nest there.

One can understand the biological utility of the tendency many parent birds show to defend fledglings more vigorously and noisily than they do callow young. The latter are almost certainly doomed if the nest is discovered whereas even if one fledgling is lost the others may jump overboard and escape into hiding if the predator's attention can be distracted while they do so.

In conclusion I feel bound to say—since I have perforce dwelt on its predatory behaviour—that from observations in an area where the Jay population is denser than anywhere else known to me I am convinced that this bird is not a menace to our avifauna. Its skill at finding nests is far less than that of the average school-boy and provided man does not destroy their habitat its victims are well able to maintain their numbers in spite of the attention of it and other natural predators.

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RECENT ADVANCES IN THE RECORDING OF BIRD-SONGS.

BY

ERIC SIMMS AND G. F. WADE.

THE scientific and technical advances of recent years have made possible considerable improvements in the methods used for recording the songs and calls of birds. The preservation of the vocabulary of birds in some form or another is generally recognized to be of importance. Not only do recordings assist identification,

but they are also available for careful and systematic analysis. Such analysis may enable comparative work to be carried out as a means of determining individual variations within the same species and approximate ranges of frequency in calls and songs, and as supplementary material for certain experimental and research work.

In America the recording of birds was greatly helped by developments in the motion picture industry. Brand (1938b) said of American progress during the preceding decade, "The advances in commercial sound motion pictures developed about this time and, as in bird-recording much the same apparatus is necessary, the development of sound recording for motion pictures stimulated the making of bird sound records." Under the guidance of Dr. Arthur A. Allen, Professor of Ornithology at Cornell University, a number of recordings were made on film since the apparatus was found to be easier to operate than that required for recording on wax or lacquer-coated disks and it was claimed that this resulted in higher frequencies being obtained. Brand, who started the bird-song recording project at Cornell, analysed from film the frequencies of over 100 American species and discovered that generally higher frequencies were being obtained than were produced by corresponding work in the same period in Britain and on the Continent. It must be remembered that at this time the British Broadcasting Corporation was not engaged on the recording of bird songs.

Today the technique of analysing bird-songs and calls has advanced considerably. The Bell Laboratories during the war designed instruments capable by means of filters of analysing speech into its chief constituent frequencies. Bailey (1950) said of this new technique, "By analogy with the way in which an optical spectrograph analyses a white light into its constituent colours, these instruments were termed 'sound spectrographs' and the records they produced 'sound spectrograms.'" In the first type of spectrograph the record was obtained on a drum of paper over which a small stylus passed leaving by chemical action a dark mark on the paper. A further development resulted in the reproduction of the sound spectrograms, not as a series of marks on sensitive paper, but as images on a cathode-ray tube. By this means a wonderfully visual representation of the bird-song or call was obtained and a study of this easily revealed the form or pattern of the audible record. This enabled simple and objective comparison of the utterances of the same bird at different times, of individuals within a species, or of different species. Such comparisons between photographs of the spectrograms can be made at leisure since it is no longer necessary to rely on the fleeting mental images of these songs. Many incidental and interesting facts emerge from such a study. An example of this was a

spectrogram of the song of the American Wood Thrush (*Hylodichla mustelina*) which revealed that the singer was able to produce at the same moment of time a rapid trill and a steady tone which indicated the simultaneous action of two separate vocal mechanisms.

There is, of course, a great deal of opportunity in this field. The British Broadcasting Corporation has a library of natural history recordings which the authors are increasing the whole time. Following on the recording work of Dr. Ludwig Koeh, efforts are being made to make this collection more complete. In the period from December, 1951, to January, 1953, sixteen British species were added to the Library and there were also many additions to the vocabulary of others already recorded; 167 species of bird are now represented. These recordings have been of value as material for certain specialised research projects. In addition, many have been broadcast and consequently have had instructional or aesthetic interest.

Until very recently bird-recording in Britain was carried out with the aid of disk-type recording equipment. From such originals gramophone records familiar to us all were produced and examples of these are *Songs of Wild Birds* and *More Songs of Wild Birds* with which the names of Mr. E. M. Nicholson and Dr. Koeh are so closely associated. Before the last war the British Broadcasting Corporation designed and had constructed portable disk-recording equipments which were completely self-contained and powered by 12-volt batteries (see plate 28). These equipments have been extensively used by the B.B.C.'s Mobile Recording Units, both in this country and abroad, during the past fifteen years for recording most outdoor sounds, including those of birds and mammals.

There are, however, certain disadvantages inherent in the disk-type recording gear when natural history recordings are undertaken in the open air. The ambient temperature has a direct bearing on the way in which the recording is made on the blank disk. For example, if the temperature is near freezing the emulsion on the disk becomes hard and brittle, and the swarf, which is the material removed by the cutter when the groove is formed, does not part cleanly from the disk so leaving the wall of the groove ragged or, at least, less smooth than is desirable. This has the effect of producing surface-noise, or what is commonly called 'needle-scratch', when the disk is played. It will be readily understood that contact between a needle and the groove when the disk is played will produce a sound, which usually manifests itself as a high-pitched hiss. This sound is unfortunately increased by making a finished gramophone record from the original disk. The process is necessary, however, as the permanent record will be used frequently and to ensure good wearing qualities

it must be made of a material considerably harder than the emulsion used for the original direct recording. The final pressings or finished records of the B.B.C. are made of a vinylite material which produces much less surface noise than the normal shellac pressings. The final, permanent record is the aim of the recording and is the determining factor with regard to background noise and quality. Because of this the minimum intensity of the sound to be recorded, for example the gentle alarm note of the hen Little Ringed Plover (*Charadrius dubius*) on the nest, must of necessity be greater than the inherent noise of the final record. It is impossible to amplify such a low-level sound beyond a certain limit as the amplifier itself contributes some noise which, however low at the beginning, is increased with greater amplification. Sounds of low intensity would be almost indistinguishable from, or unrecognisable in, the general background noise emanating from the equipment itself.

With this type of gear, weight is an important factor when one is undertaking expeditions to comparatively inaccessible regions or across terrains where man-handling of the equipment is imperative. In addition to the two 6-volt type batteries, motor-generator, turntable and turntable unit, the recording amplifier and microphones, a mixer unit to combine the outputs of several microphones, and drums of cable, there are also the very necessary but weighty blank recording disks.

Although many good recordings of birds were made on the disk-type recording gear, the disadvantages, some of which have been listed, encouraged the authors to make a more detailed examination of a newer type of recording medium which was becoming available—namely, magnetic tape. This had been previously used in Germany and elsewhere. In magnetic tape recording the general principle of amplifying the sound received by a microphone is the same but the recording is no longer made on a disk. The amplified electrical output from a microphone is fed to a magnetic recording head whose function is to convert the electrical impulses into a varying magnetic field. This field is concentrated in a very narrow gap in the recording head. A length of tape, made either of paper or some plastic material, with a coating of ferric oxide is passed across this gap in the recording head at a uniform speed and the varying fields magnetise the coating of the tape in sympathy with the original sounds. To enable the recording to be heard it is also necessary to have a reproducing head which will be sensitive to the magnetic variations in the tape. The tape on which the recording has been made must be passed across the reproducing head at the same speed at which the recording was made. The reproducing head converts the varying magnetic field into electrical impulses which are amplified and fed to a loud-speaker.

Generally speaking, the surface noise of a magnetic tape record-

ing is far lower than that of a gramophone record, and it therefore becomes possible to record and reproduce many sounds of extremely low intensity as they are no longer masked by this surface-noise. Much of the vocabulary of the Badger is in this category, but it has been possible to record it on tape, so capturing low conversational calls that few observers could ever hope to hear at the sett. The Little Ringed Plover, to which earlier reference has been made, and the Stone Curlew (*Burhinus oedipnemos*) were found, when recorded on a tape recording machine, to produce calls which were so subdued that they could not have been audible many feet away. The authors have also succeeded in recording the actual footfalls of Foxes and Badgers by means of a tape recorder.

Early in 1951 a direct comparison between the types of apparatus described in this paper was made in Kensington Gardens, London. Simultaneous recordings were made on both sets of apparatus of the dusk and dawn chorus. In both cases the output of the same microphones was used so that an eventual comparison in the recording of the same sounds could be made. It was found that more birds could be heard singing in the background on the tape recording than on the disk, although the level of the dominant singer, a Song Thrush (*Turdus ericetorum*), was approximately the same on both recordings. Owing to the almost complete absence of noise on the tape recording it was possible to reproduce more faithfully the distant songs and calls which naturally were of much lower intensity. This contributes a natural depth or perspective to the recording. Of course, had such field recordings been made under ideal indoor conditions on the high fidelity studio type of disk equipment, with a constantly maintained temperature and no dust, there should have been little or no apparent difference in the respective quality of the two recordings. It is, however, not practicable to use this kind of studio apparatus in the field.

A further great advantage of the tape system is the increased duration of uninterrupted recording possible with a single machine. In disk-recording with one turn-table, as in the case of mobile apparatus, it is only possible to record for a period of $4\frac{1}{2}$ minutes before changing the disk. This is not true where slow-speed recording at $33\frac{1}{3}$ revolutions per minute is carried out, but slow-speed recording is normally confined to indoor operation. The tape recorder shown in our illustration carries a plate or spool on which is wound some 3,250 feet of magnetic tape. The speed at which the tape is made to pass the recording or reproducing head can be pre-set to either 15 or 30 inches per second. At the former speed a recording of approximately 42 minutes duration can be made without changing the tape and at the latter the duration would be half that figure. Should there be any unwanted material

recorded on the tape it is possible to run this back from a second spool and, by means of a third head known as the wiping head, to erase it. This provides an opportunity for running the tape back at intervals, if no successful recording has been made, and continuing to record on the same length of tape which previously carried the unsuccessful recording. By this means two single bird calls of some 7 seconds total duration were recorded over a period of $8\frac{1}{2}$ hours. To have made absolutely certain of capturing these two sounds on a disk-recorder it would have been necessary to cut and waste at least 125 disks.

It is clear that such methods can be extremely uneconomical. By only rewinding the tape once in every period of 40 minutes, when the speed is pre-set at 15 inches per second, a great deal of time is saved, since changes of disks over the same period would occupy nearly 5 minutes, while the tape can be rewound at great speed. There is always the possibility, too, that the bird's song or call might be missed during the period in which the disks are being changed. It would be possible to prevent this by using two turntables and apparatus to record continuously, but it would necessitate double the portage and would still be uneconomic because of the enormous wastage of disks.

The present tape equipment that we have used on bird-recording is rather less than the weight of the disk-apparatus. Apart from such ancillary gear as microphones, cables—and batteries when no mains supply of electricity is available—the apparatus is in two separate cases and is far more easily handled. Its total weight is only 182 pounds. This is of tremendous importance where difficult conditions have to be faced. There is one new type of tape recorder which is so small that it weighs less than 20 pounds, including spools of tape. It will operate for about ten minutes and is being used on an experimental basis in extremely difficult conditions which would prevent heavier apparatus being used. With this machine the senior author obtained most gratifying results in recording waders on the Hilbre Islands.

Tape recorders are not so susceptible to damage by the vibration or jarring they may be subjected to whilst in use in the field. Any knocks or severe vibration, such as the turntable of a disk-recorder could suffer under field conditions, would almost certainly result in the track or groove on the disk being broken. For natural history recordings it is also a great advantage to have equipment that does not demand specialised operation and enables recording to be started immediately. Both these needs are met by tape recording.

The final advantage of the tape recorder we have used for natural history sounds is the ease with which a continuous check can be maintained on the actual material being recorded. This is achieved by pressing a key which enables the operator to listen

either to the incoming sounds from the birds themselves or to the output of the reproducing head over which the tape passes on its way to the take-up spool after recording. In practice we listen to the recorded material and not to the direct sound and thus keep a check on the quality of the recording. Plate 29 shows one of the authors operating a mobile tape recorder.

Up to the present we have used the dynamic—or moving coil microphone as it is commonly called—in conjunction with our tape recorder. A great deal of research into the potentialities of other types of microphone has still to be made and for this reason we must postpone discussion of this particular aspect. Nevertheless, considerable advances in the use of the dynamic type of microphone have been made possible by the introduction of a device known as a parabolic reflector which greatly enhances the ability of the microphone to pick up sounds coming from the direction in which it is sighted. The dynamic type of microphone without a reflector is almost completely omni-directional but has a slightly greater pick-up of sounds which come from a source immediately in front of it. The addition of a reflector increases the effective pick-up and range of the microphone for sounds coming from the exact direction in which the reflector is facing.

Although the authors are (so far as they are aware) the first to use this device for birds in Britain, the idea is not new. In February, 1935, ornithologists from Cornell University set out to travel some 15,000 miles in the United States with the object of securing permanent records of the voices of vanishing species of birds and also of filming their habits. On this expedition their microphones were supplemented by a large parabolic reflector and with its aid was secured the voice of the rarest of all North American birds—the Ivory-billed Woodpecker (*Campephilus principalis*). For a number of years the Cornell Laboratory of Ornithology through the sponsorship of the Albert R. Brand Foundation has been engaged in recording the songs and calls of birds and has used this type of reflector on many occasions. A reflector has also been used in Sweden.

Briefly the principle of a parabolic reflector may be compared to that of an electric bowl fire, but with an opposite function. In the case of the bowl fire the element is situated in such a position that the heat emitted by it is reflected out from the bowl in the form of a beam and this is due to the curvature of the bowl itself. In the case of the parabolic reflector used in sound recording, the sound waves strike the surface of it and are then reflected, owing to its bowl shape, to a focal point in front. At this focal point which is a short distance from the reflector a dynamic microphone is placed with its face directly towards the centre of the reflector and its back to the source of sound. The sound waves received by this microphone are thus concentrated by the reflector, thereby

increasing both the range at which sounds may be picked up and the amount of sound available for reording. The reflecting surface is of metal whilst the back is damped with a thick layer of sponge rubber to deaden the effect of sounds which may occur behind the reflector. The distinctness of the sounds received by the microphone is enhanced by the exclusion of unwanted sounds.

We have used two sizes of reflector for the field reording of birds. These have diameters of 18 inches and 36 inches (see plate 30) respectively and the principles of construction and use are the same in both cases. The larger of the two has the advantage of concentrating the sounds from a wider area, but it is important that the reflector be sighted onto the bird as accurately as possible.

Our increased use of these reflectors has opened up fascinating and valuable possibilities in the recording work with which we are concerned, but at all times their limitations must be realized for full value to be derived from them. With their aid recordings have been made at such a range that no disturbance of the birds or their areas of activity has been necessary. In addition, birds in inaccessible places such as on sheets of water, mudflats, marshes, or in fens, may be brought within recording range. This extension of range has also made it possible to record the calls of birds in flight by following them with the reflector microphone. These sounds were beyond the range of the old recording apparatus. The difficulty of accurately reording such calls as the scream of the Swift (*Apus apus*) on the wing was in the past almost insurmountable because of the drop in pitch resulting from the speed of the bird in relation to a fixed microphone. Now, by tracking the bird in flight, this apparent change in pitch can be eradicated. If the reflector's traverse actually follows the bird then the effective result is the same as the reording of a stationary bird before a fixed microphone. If the bird is flying away the call itself will gradually diminish, but the pitch will remain the same. This has been shown by experiments in August, 1952.

The first experiments were carried out with the larger of the two reflectors, the subjects being duck afloat on a lake, and various song-birds. In Kent a Cuckoo (*Cuculus canorus*) with an unusual trisyllabic call was recorded at a range of 420 yards. An interesting fact about this recording, beside that of the distance involved, was the realisation that other bird sounds which had been inaudible to the human ear appeared on the recording with the Cuckoo. These additional sounds, which included the songs of the Song Thrush, the Great Tit (*Parus major*), and the Turtle Dove (*Streptopelia turtur*), were all the same distance away as the Cuckoo. Recordings of a number of song-birds were made during the summer of 1951 mainly at ranges of from 30 to 100 yards. In December, 1951, a special attempt was made to record Rooks

(*Corvus frugilegus*) and Jackdaws (*C. monedula*) in flight, and a wide series of recordings was made. Birds were tracked in mid-air as they dispersed from their Midland roost in the early morning. The nearest birds to the large reflector were 120 yards away and the majority of the flight recordings were made at ranges varying from 120 to 200 yards. Fieldfares (*Turdus pilaris*) were also recorded in flight at a distance of 200 yards. Of the varying tasks which the large reflector has been called upon to perform one of the most successful has been the recording of Redwings (*T. musicus*) in a mid-winter roost. The reflector was placed on one side of a small Staffordshire lake which separated the recording point from the roost itself by some 20 to 30 yards of water. The 36-inch reflector is, however, both heavy and cumbersome to move; it also requires a strongly built and weighty tripod to support it. It has, nevertheless, proved extremely valuable on certain special occasions.

For most situations the smaller reflector has proved more suitable. This 18-inch reflector with its small stand can be moved with comparative ease and this is of great advantage when wide and uneven surfaces such as that of the floor of the uncompleted William Girling Reservoir at Chingford have to be crossed. On that site it was used to record the anxiety note of the adult Little Ringed Plover when young were present. Since young birds of this species move freely, they and the adults were most elusive, but a series of recordings was successfully made at ranges which varied from 30 to 60 yards. Snap recordings of birds can also be made, as and when opportunity offers, without too elaborate preparations. The first recordings of the Yellow Wagtail (*Motacilla flava flavissima*) and of the alarm of the Stonechat (*Saxicola torquata*) were obtained in this way.

The small reflector was used in September, 1951, and with great effect, to record Starlings (*Sturnus vulgaris*) roosting in London. Previously the noise of traffic had overwhelmed the birds, but the reflector enabled a recording to be made in which the birds themselves can be heard with great clarity. In 1952 the small reflector was again used with great success, and recordings were made for the first time for the B.B.C. of the flight calls, alarms and spring display of the Stone Curlew, the calls of the Sheld Duck (*Tadorna tadorna*), Garganey (*Anas querquedula*), Little Tern (*Sterna albifrons*), Little Grebe (*Podiceps ruficollis*), Sand Martin (*Riparia riparia*), and Bearded Tit (*Parus biarmicus*). Songs of the Cirl Bunting (*Emberiza cirlus*) and the Collared Turtle Dove (*Streptopelia decaocto*) were also secured. In January, 1953, this reflector was used to obtain the call and song of the Black-bellied Dipper (*Cinclus cinclus cinclus*) in Norfolk; in March, 1953, to record the calls and song of the Crossbill (*Loxia curvirostra*); and in April, 1953, those of the Linnet (*Carduelis cannabina*) and of the Redpoll (*C. flammea*).

In all these experiments with reflectors a magnetic tape recorder has been used and careful co-operation between the operator of the reflector and the recording engineer has been essential. Although these new devices are improving the methods of bird-recording, the original essentials of patience and determination remain. Close and understanding team work is enhancing the value of the new apparatus, and team and apparatus must progress together. Careful field-work and study of the individual birds to be recorded before an expedition is undertaken, usually means that, by anticipating the actions of the birds, success can be achieved. The element of chance still remains since birds, weather, aircraft and other extraneous noises cannot be regimented. Should conditions be satisfactory and the birds willing, then the equipment is rapidly assuring a probability of success, both in obtaining the actual bird-voice and in faithful reproduction of what an observer in the field would hear. From the standpoint of the equipment the element of chance is far smaller than it was.

The advances which have been discussed in this paper continually suggest new opportunities and needs for experiment, and it is intended to carry out research into the limitations and advantages of new microphones in connection with natural history recording. Another piece of equipment which has recently become available as an adjunct to portable recording gear, where the use of cables is impracticable, is a lightweight pack-set transmitter and receiver with a combined weight of some 27 pounds. This weight includes built-in battery power supply for both the transmitter and receiver. It has recently been used with great success, in conjunction with recording gear, for the capture of certain difficult sound effects. As occasions present themselves this pack-set will be used on trial for natural history recordings where the operator requires greater mobility and does not wish to be hampered by the many yards of cables which are necessary when recording directly from a fixed microphone point. In all cases the aim is to record more faithfully the sounds of nature, and with scientific aids that are more reliable in quality and operation this is becoming increasingly possible.

The authors would like to thank the Chief Engineer of the B.B.C., and the Superintendent Engineer (Recording) together with members of his staff, for their perusal of the paper in manuscript, and for permission to publish details of this work.

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RARE LARKS AND PIPITS AT FAIR ISLE IN 1952.

BY

KENNETH WILLIAMSON.

(*Fair Isle Bird Observatory*)

EASTERN SHORT-TOED LARK (*Calandrella cinerea longipennis*).
 OCTOBER 6th-7th and 9th-11th. A. G. S. Bryson found what was undoubtedly the first of these birds on the 6th, but was unable to identify it because of its wildness and the poor light. Search next day was unproductive until Colonel R. Meinertzhagen found it in stubble in the late afternoon and collected it. The determination was made later on a comparison with material in his own collection. The bird was an adult male, very fat, and had been eating seeds of *Cerastium*. Its weight was 26.3 gm. and the wing measured 92 mm., bill 12 mm. from skull, tarsus 21 mm. and tail 60 mm. The 2nd and 3rd primaries were longest, and the 4th 2 mm. shorter.

Colonel Meinertzhagen found an identical bird in the same stubble-field on the 9th, and during the next few days this was also watched by Dougal G. Andrew, Dan Bateman and myself. At this period a strong westerly gale was blowing, with frequent heavy showers—conditions which made critical observation difficult. My best views were in a good light on the morning of the 10th: the general impression was of a pale greyish-brown bird streaked with darker brown above, and whitish below with some slight streaking on the breast. The crown was sandy-brown flecked with darker, and lacked a crest; the ear-coverts were dark in contrast with the paler eye-stripe and cheeks. I could see no indication of black spots at the side of the neck.

The bird struck us as being very unlike a Skylark (*Alauda arvensis*) in its habits. Many of this species were feeding in the same stubbles, but the bird did not associate with them, nor did

it ever call (as they did) on being flushed. Whereas the Skylarks climbed on rising and usually passed to another field this bird flew low and alighted only a short distance away, to stand upright in the stubble with its head raised alertly. We did not see it crouch as larks normally do when suspicious.

These are the third and fourth occurrences of the Eastern Short-toed Lark at Fair Isle, the previous ones being dated November 11th, 1907, and October 29th, 1927. This race has also occurred on Whalsay, in Shetland, but not elsewhere in the British Isles so far as is known. In this connection attention should be drawn to the inaccurate record of its appearances given in the new *Check-list of the Birds of Great Britain and Ireland* (London, 1952), p. 61.

CRESTED LARK (*Galerida cristata*).

November 2nd. James A. Stout watched an unusual lark which he disturbed from the grassy brae below the Chapel and followed into a stubble-field. He described it as a pale, almost sandy bird, practically unstreaked in comparison with the Skylarks feeding in the same area, and remarkably "long-headed"—an effect due to the length of its crest when depressed. After getting several close views of the bird through binoculars, both on the ground and in flight, he was confident that it was a Crested Lark. One character which he noted, and which we later confirmed from a skin, is that when the bird rose the short tail appeared more variegated than a Skylark's, showing a three-colour pattern—the central tail-feathers dark brown and matching the wing-feathers, the others very blackish with the exception of the outermost pair, which were buff. He considers that this contrasting tail-pattern may be a useful point if a close view of the rising bird is obtained. The bird had a clear whistling call-note.

There appears to be no previous record of a Crested Lark for Scotland.

PETCHORA PIPIT (*Anthus gustavi*).

October 16th-18th. This small, dark brown bird proved so great a skulker that neither Edward Skinner nor I were able to get a single satisfactory view of it during several encounters spread over the three days. It haunted the depths of two neighbouring cabbage-patches, going from one to the other each time it was disturbed. Our only brief view of it in the open was obtained late on the 16th and the suggestion of a buffish stripe down the mantle contrasting with the dark brown upper parts, plus the fact that whitish outer tail-feathers had already been seen when the bird flew, led us to suspect a Petchora Pipit. This provisional identification was confirmed on the following morning by James Wilson, who has seen and heard the species on previous occasions. The bird had the misfortune to fly into telephone wires on the 18th, and the skin is now in the Royal Scottish Museum.

If our experience of the shy behaviour of this bird is a fair criterion (and James Wilson and James A. Stout agree that it is) then the only field-character of any value is the quite distinctive call-note. *The Handbook*, vol. 1, p. 202, says that this is not unlike the call of the Meadow Pipit (*Anthus pratensis*) "but is softer and noticeably lower in key." This, I feel, is too indefinite, for the note is entirely individual and not at all like that of any other pipit that I am familiar with. It is a strong, hard, forceful call, and the nearest rendering I can get is a sharp "pwit", uttered perhaps once only, but more often several times in rapid succession as the bird rises. The pitch is certainly low, and the voice lacks sweetness or richness of tone. It is a singularly unattractive call, but absolutely diagnostic.

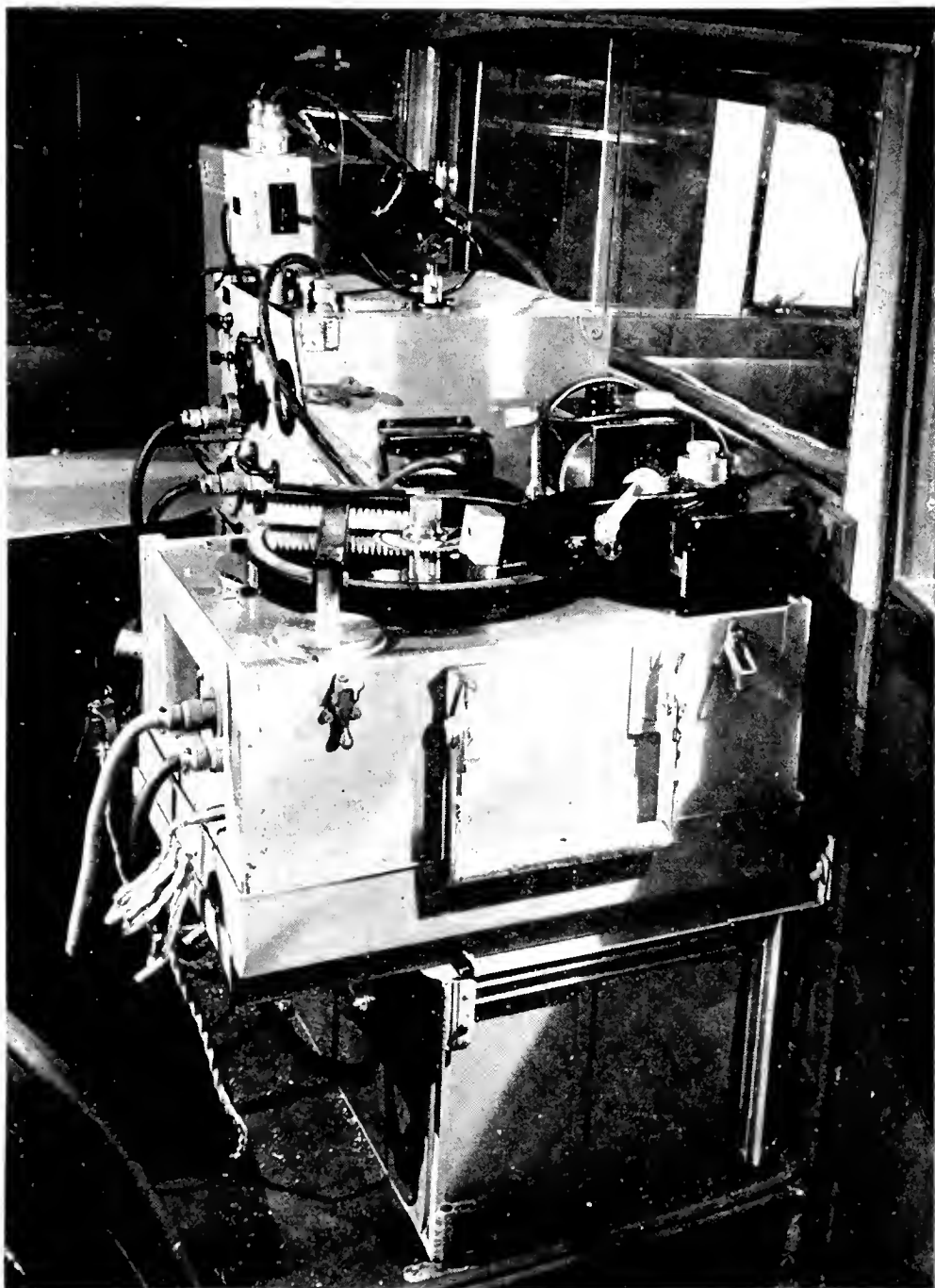
There have been about a dozen occurrences of this elusive bird in western Europe, all of them at Fair Isle. It is interesting to record that the present example, like the one which James Wilson saw on October 2nd, 1951, coincided with the peak movement of Northern Chiffchaffs (*Phylloscopus collybita* subsp.) through the isle.

RED-THROATED PIPIT (*Anthus cervinus*).

May 31st. I had excellent views of this brightly-plumaged bird as it foraged on the heather-grown moorland at Vaassetter, and it was also watched by my wife and Miss Peggy Condliffe. It was of Tree Pipit (*Anthus trivialis*) size, but stockier looking, and, we thought, rather shorter-legged and less active in its movements than the commoner pipits. It was a darker, richer brown above and more coarsely streaked than either Tree or Meadow Pipits, this streaking extending to the rump—a point which could be observed quite easily as the bird often walked with the wing-points carried below the level of the tail. Much of the head was of the same chestnut colour as the breast, and this colour was much richer than in any of the specimens figured in *The Handbook* (vol. 1, plate 21) and was more nearly matched by the brighter of the birds figured in H. E. Dresser's *Birds of Europe* (vol. 3, plate 136), an adult male example.

The only call-note we heard was a clear and rather strident "pee-ez", faintly but decidedly disyllabic. It was sometimes uttered singly when the bird was disturbed, but on other occasions was repeated three or four times, and without doubt this is the note rendered as "skeeze" in *The Handbook* (vol. 1, p. 200). The clear, ringing tone of the call was sufficiently distinct from that of the Tree Pipit to attract immediate attention.

Of the 25 or so records of this pipit in the British Isles only 4 are for the spring, the most recent being of 6 birds seen at Fair Isle on May 8th, 1936. The present is later by nine days than the previous latest spring occurrence.



A B.B.C. MOBILE RECORDING UNIT (DISK TYPE).

(Photograph by courtesy of THE B.B.C.).

View from the offside of the recording car showing the recording turntable in the foreground.

(see page 200)



A MOBILE TAPE RECORDER OPERATED BY G. F. WADE.
(*Photograph by BERTRAM READ.*)



A 36-INCH PARABOLIC REFLECTOR OPERATED BY ERIC SIMMS.
(Photograph by courtesy of THE B.B.C.).

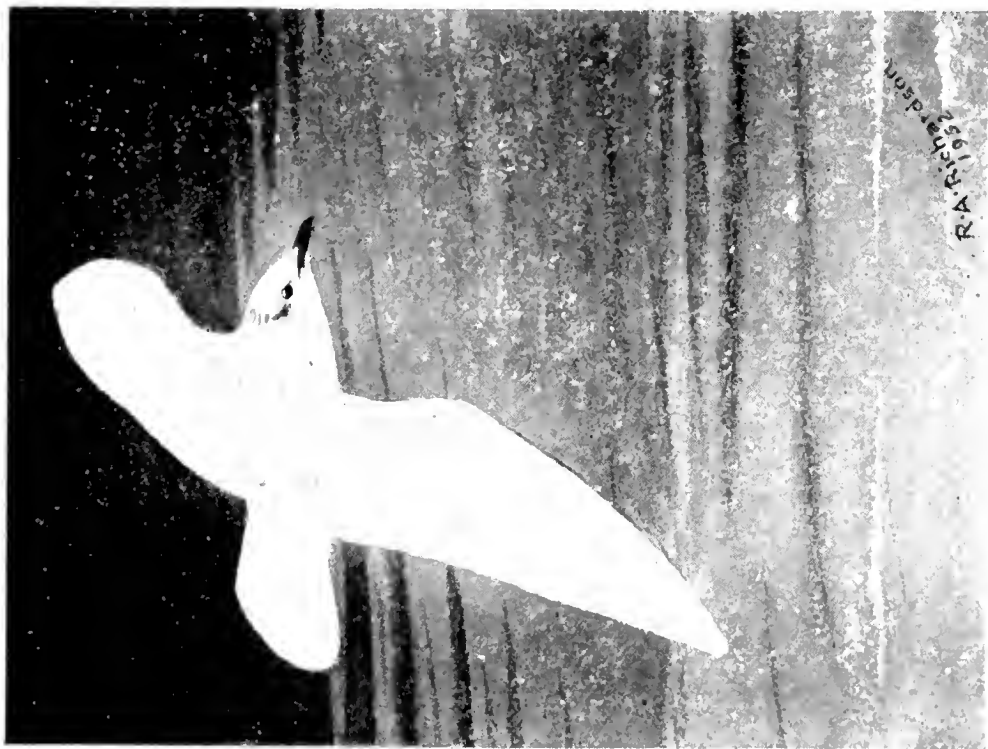


LESSER GREY SCURKIE (*Larus minor*)
MONKS' HOUSE OBSERVATORY, NORTHUMBRIA.

SEPTEMBER 14TH, 1952.

(Photographed by ERIC CAMPBELL.)

(see page 226)



MEDITERRANEAN BLACK-HEADED GULL (*Larus melanocephalus*)
ADULT IN WINTER PLUMAGE.

SHIRINGHAM, NORFOLK, WINTER 1952-53.

(From a painting by R. A. RICHARDSON.)

(see page 216)



NESTING HAUNT OF BARNACLE GOOSE (*Branta leucopsis*). SPITZBERGEN, 1922.

(Photographed by MAJOR W. M. CONGREVE).

The figures in the foreground are the late Rev. F. C. R. Jourdain and the late B. W. Tucker.

(see page 213)



NEST AND EGGS OF BARNACLE GOOSE (*Branta leucopsis*). SPITZBERGEN, JUNE, 1922.
(Photographed by MAJOR W. M. CONGREVE).



BARNACLE GOOSE (*Branta leucopsis*) ON NEST, SPITZBERGEN, 1922.
(Photographed by Major W. M. CONGREVE)



BARNACLE GEESE (*Branta leucopsis*) FEEDING. GOTLAND, SWEDEN, MAY 13TH, 1949.
(Photographed by ARTHUR CHRISTIANSEN).

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

XLIX. BARNACLE GOOSE.

Photographed by ARTHUR CHRISTIANSEN AND
MAJOR W. M. CONGREVE.

(Plates 32-35)

WITH its creamy face and black crown and neck, black breast and greyish-white belly, white above and below the black tail, and grey back and scapulars barred with white-edged black, the Barnacle (*Branta leucopsis*) is the most pied of the black geese. To Britain it is a very local winter-visitor mainly confined to parts of the west coast of Scotland (above all, the Hebrides), to the Solway Firth and to the north and west of Ireland. It feeds on coastal grasslands and, if undisturbed there, is far less likely than the smaller Brent (*B. bernicla*) to be found on the saltings. Arthur Christiansen's magnificent photograph (plate 35) shows migrant Barnacles on grassland in Gotland, Sweden.

One of the most fantastic myths of natural history used to surround this goose, which was once supposed to be generated within a shell-like fruit on a tree. This fruit was usually depicted in the shape of the shell-fish which now bears the name "barnacle", and so there grew up the remarkably persistent belief that ship-barnacles produced the geese. Ridiculous as this now seems, it was not until Alexander Koenig (*Avifauna Spitzbergensis* . . . (1911), pp. 222-26) described the discovery in June, 1907, of Barnacle Geese nesting on a rock-bordered terrace up the steep side of a valley leading to Advent Bay in Spitzbergen, that anything was known about its breeding. Although the following year (see A. L. V. Manniche (1910) *The terrestrial mammals and birds of north-east Greenland* . . .) the species was found breeding in Greenland, few nests had been seen by ornithologists when the Rev. F. C. R. Jourdain and an Oxford expedition in 1921 re-discovered Koenig's colony on the valley-terrace. Both in 1907 and in 1921 geese were seen on the cliffs above this terrace, but the sites were considered practically inaccessible, and it fell to Jourdain, B. W. Tucker and Major W. M. Congreve in June, 1922, to reach some. Three of the historic photographs taken at that time are reproduced here: plate 32 depicts the haunt of Barnacle Geese in Spitzbergen with Jourdain and Tucker in the foreground, while plates 33 and 34 each show a nest on a pinnacle and the valley far below in the background. The story of the discovery of these nests after the disappointment of finding deserted Koenig's comparatively easily accessible colony is related by Congreve (in *The Oologists' Record*, vol. xxvi, pp. 1-2, 20-22

and 33 *et seq.*). Cliffs are the normal breeding-sites for this species in the wild, and low-lying ground near water exceptional. It has of course been bred in captivity and by the Firth of Tay full-winged Barnacle Geese have nested in a semi-wild state. 21 birds escaped from there in 1948 and some at least made their way to north Norway and, it appears, returned to Scotland as "wild" visitors in subsequent winters (see J. Berry in *Proc. Xth. Int. Orn. Congr. Uppsala, 1950*, pp. 339-40). There is now a small breeding colony of escaped birds in north Norway.

I.J.F.-L.

NOTES.

White-billed Diver in Yorkshire.—A White-billed Diver (*Colymbus adamsii*) was picked up in an exhausted condition near the mouth of Hedon Haven, Paull, E. Yorkshire, on February 18th, 1953. It was found by Messrs. Bunting and Stathers of Paull and died very shortly afterwards. It was brought to me for identification, but I did not receive it until February 24th and although the viscera had been removed and kept, they were too decomposed by then to allow the sex to be determined. The bird was grimy and slightly oiled.

After a confirmatory examination by G. H. Ainsworth, the skin and, later, the remains of the skeleton were forwarded for preservation to Alfred Hazelwood of the Bolton Museum who has provided the following description of the plumage after cleaning: "Upper-parts generally brownish-grey with a few white-spotted, black feathers newly grown in upper scapulars. Upper wing-coverts black with white spots. Chin, throat and rest of under-parts white, except lower neck which is flecked brown-grey and flanks brown-grey streaked with darker brown-grey. Thighs black-brown, some feathers with paler tips."

Its feet and tarsi were a greyish-umber on the outside, and ivory tinged with blue-grey on the inside, the latter being suffused with pink on the feet while the inner tarsus was pink posteriorly. The characteristically-shaped bill, the lower mandible curving upwards towards the tip, was ivory in colour, shading to horn at the base, this being darker on the upper mandible. The interior of the mouth was very pale flesh-pink, the gape dark blue-grey.

The bird, an adult, was undergoing moult from winter into summer plumage and was most probably incapable of flight. The cause of death was not ascertained, but it seems very probable that oil-poisoning, resulting from preening, drove the bird to seek fresh water and eventually proved fatal. KENNETH FENTON.

[In addition to the details given above we have received very detailed description of the soft parts and full measurements of the bill and tarsus. This is the fourth White-billed Diver to be

recorded in Yorkshire, and the thirteenth in Britain. It should be remembered that all but 3 of these 13 occurrences have taken place in the last eight years, 5 of them in 1952 (*vide, antea*, vol. xlv, pp. 421-424).—EDS.]

Buff-breasted Sandpiper in Northamptonshire.—At about 2 p.m. on September 18th, 1952, at Northampton sewage farm, I noticed among several Ringed Plovers (*Charadrius hiaticula*) and two Little Stints (*Calidris minuta*) feeding on a waterlogged ploughed field a bird which I took at first to be a Reeve (*Philomachus pugnax*). However, I realised that it was much too small for a Reeve, and then I began to see other characters that did not fit with this identification. I watched the bird at a range of about 20 yards for five or ten minutes before it disappeared.

Before consulting any reference book I noted down the following description: "Size as Curlew Sandpiper or slightly smaller (it joined two Curlew Sandpipers (*C. testacea*) while I watched it). Bill straight, narrow, black. Eye dark. Legs (not seen well), dull brown, certainly not black. Whole head, breast and sides uniform buff; no markings on face. Back and scapulars pale brown with black centres (spotting as marked as in Ruff, but spottings smaller). Upper tail-coverts and tail (once seen in short flight of one foot), dark. Sides of tail (?under tail-coverts) whitish or pale buff."

I came to the conclusion that I had been watching a Buff-breasted Sandpiper (*Tryngites subruficollis*). Of the illustrations which I subsequently consulted, the one which looked most like the bird I saw was the plate by Keulemans (bird on ground) in Dresser's *Birds of Europe*. This shows the bird in the "squatting" position said to be characteristic of it, and which was adopted for most of the time my bird was under observation; at my very first sight of it the bird was "at full stretch". The plate in *The Handbook* had two discrepant features, the long legs and the dark markings before and behind the eye.

A number of observers saw the bird on September 21st. A. R. Blake and C. Lambourne watched it continuously by relays for over three hours on that day. They noted it as a small, rather long-legged, slim wader between Dunlin (*C. alpina*) and Common Sandpiper (*Actitis hypoleucos*) in size, looking more like a Ruff at a distance than at close quarters. They found the rounded head noticeable, though this was a point that had specifically failed to strike me. Plumage points that they specially noticed were: white axillaries and patch in the centre of the under-wing noted when the bird stretched its wings upwards; rest of under-wing grey. No wing-bar when wing outstretched or in flight. Whole upper tail area brown in flight—no white patches or margins at all. Face, throat and breast warm buff, paling to buffish white

on under tail-coverts. Legs, longer than Dunlin and a deep, bright yellow.

R. S. R. Fitter, who was present at the same time, writes: "I found it one of the most distinctive small waders I have ever seen. In the bright sunshine the buff head and breast shone like a little yellow beacon. . . . The markedly small head, longish neck and shortish bill were noticeable characters. . . . It looked more like a Reeve in flight than at rest."

On the same date it was also seen by R. H. Baillie who recognised it as a bird he had seen, but not identified, on September 17th. The bird was not reported after September 25th.

The field notes of Ian Cumberpatch, A. R. Mead-Briggs, Miss C. K. James and A. J. B. Thompson also confirm the above descriptions, which leave no doubt that it was a Buff-breasted Sandpiper, the twentieth certain occurrence in the British Isles, and the first for any inland county since the first British specimen in Cambridgeshire in September, 1826.

A. J. B. Thompson was the only observer who heard any call-note, which he described as "quite unlike that of any of the waders I know, but I cannot exactly identify it with the notes described in *The Handbook*; it may be the 'pr-r-reet' mentioned there. When I flushed the bird it flew close to me and called four times as it mounted, a single note, rather quiet, rather creaking, slightly reminiscent of the call of a Snipe (*Capella gallinago*), but softer and shorter. I wrote it down as 'feezk' or 'wheesk', the 'ee' sound being nasal or creaky."

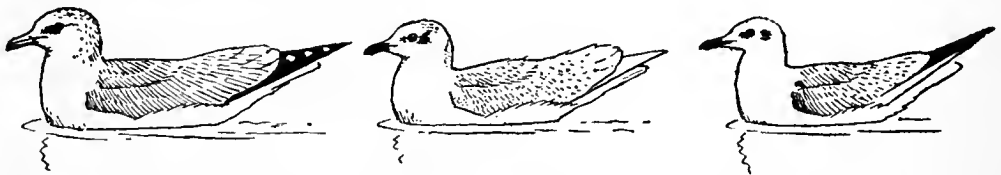
H. G. ALEXANDER.

Mediterranean Black-headed Gull in Norfolk.—On November 19th, 1952, while searching through a mixed flock of gulls feeding at the sewer outlet some 150 yards off the beach at Sheringham, Norfolk, I noticed a bird which was strikingly different. Points which immediately stood out were the absence of black on the wings and the lack of a white leading edge as present in the Black-headed Gull (*Larus ridibundus*). The following notes were taken before fading light and a strong north east wind made conditions impossible:—size a little larger than a Black-headed Gull, wings not so long and pointed, being a lovely pearly grey, graduating to whitish from the carpal joint to the primaries, also a narrow white edge to the rear of the wings. Under-parts and tail white, the latter slightly rounded. The wing appeared lighter below than above.

On reference to *The Handbook* it was apparent that the bird was an adult Mediterranean Black-headed Gull (*L. melanocephalus*). The bird was present the next morning and was seen by many observers on frequent occasions during November, December and January. It was last seen on January 25th, 1953. These further details were noted in comparison with Black-headed

Gulls:— legs and bill dark blood red, the latter being thicker and slightly more downcurved. A darkish patch of grey just behind each eye and some grey streaks on the nape. The flight seemed stronger and more purposeful due perhaps to the thick-set appearance and broader and shorter wings. On the sea or shore it could be singled out by shape alone, being somewhat squat and never holding the head so high and erect. The wings projected only slightly beyond the tail. It associated with other gulls but generally kept away from the centre and thickest part of the flocks. Its feeding habits were similar to those of *ridibundus*. On the sea it pecked lightly at the surface, while in flight it often dipped down to feed without settling. PETER R. CLARKE.

Additional notes on the Mediterranean Black-headed Gull in Norfolk.—Seen on the wing for the first time this gull's exquisite pearliness struck one most forcibly, the salient feature being the complete absence of black on the wing tips (the narrow black outer web of the outer primary, if present, was looked for without success) and lack of the white leading edge so prominent in *ridibundus*, an important point insufficiently stressed in *The Handbook*. The underwing was pure white without the dark "shadow" on the primaries as in *ridibundus*. In addition the wings were decidedly blunter, broader and less angular and gave the flight a more buoyant, languid character. They showed two distinct shades of grey on the upper surface, the blue-grey of the coverts merging softly into the frosty-grey of the flight feathers, a wing pattern to be found more strongly in the adult Kittiwake (*Rissa tridactyla*). The secondaries were tipped with white forming a



ADULTS IN WINTER OF COMMON, MEDITERRANEAN BLACK-HEADED, AND BLACK-HEADED GULLS—

TO SHOW SOME DIFFERENCES AND SIMILARITIES.

(From pen-and-ink drawings by R. A. RICHARDSON.)

conspicuous bar along the trailing edge. Except for the mantle which was of the same shade of grey as the wing-coverts, the rest of the plumage was of the purest white relieved only by a boldish dark mark behind each eye joined over the hind crown or nape by a band or half collar of smudgy grey markings.

In size the bird came somewhere between *ridibundus* and the Common Gull (*L. canus*) and like the latter was stockier and more burly, fuller-chested and shorter-necked in flight. On the

water it sat rather lower and less alertly than *ridibundus*, often with a humpbacked appearance, the wide and apparently silky-textured inner secondaries frequently raised and fluttered by a gentle tail wind, this small point readily identifying the bird among the general concourse when the pale primaries were invisible (see line drawing). No calls were heard. These notes are taken from the observations of P. A. D. Hollom and myself.

R. A. RICHARDSON.

[A sketch of this bird by Mr. Richardson is reproduced on plate 31.—EDS.]

Yellow-billed Cuckoo in Shetland.—On November 1st, 1952, after three days of strong westerly winds, an immature female Yellow-billed Cuckoo (*Coccyzus americanus*) was picked up in a dying condition at Exnaboc in the south-east of Mainland, Shetland. The identification was confirmed by Kenneth Williamson who records the finding on it of a specimen of the mallophagan parasite *Cuculiphilus decoratus* (Kellog). The skin of the bird is now in the Royal Scottish Museum. There are two previous records for Scotland (Inner Hebrides, November 6th, 1904, and Orkney, October 22nd, 1936).

T. HENDERSON AND L. S. V. VENABLES.

Yellow-billed Cuckoo in Sussex.—On November 11th, 1952, I received from Miss Patricia Gabriel a Yellow-billed Cuckoo (*Coccyzus americanus*) which had been found dead in Furness Road, Eastbourne, Sussex, on November 4th. The bird had received extensive injuries due probably to collision in flight with a brick wall near which it was found. Confirmation of its identity was obtained from the staff of the Bird Room of the British Museum. Measurements of this unusual bird were as follows: wing 154 mm., tail 143 mm., tarsus 24.5 mm., bill 28 mm.. The skin is now in my collection.

ERIC SIMMS.

[These two occurrences of the Yellow-billed Cuckoo in opposite extremes of the country (some 640 miles apart) bring the total of British records to 18. They appeared during a period of strong westerly winds when other American rarities were also noted. These included White-rumped Sandpipers (*Calidris fuscicollis*) in Lancashire and Devon and an immature American Robin (*Turdus migratorius*) on Lundy Island, details of which will be published in a forthcoming number. The dates also coincided with the later stages of the remarkable "wreck" of Leach's Petrels (*Oceanodroma leucorhoa*) which may or may not have originated from American waters.—EDS.]

Alpine Swift in Somerset.—It may be of interest to relate that exceptionally good views of an Alpine Swift (*Apus melba*) were obtained at Wembdon, near Bridgwater, Somerset, on November

2nd, 1952. The bird was first seen at 12.55 p.m. by M.L.C., and then by her husband, Mr. W. B. Colthurst, circling high above their house for over ten minutes, once coming down low. Later it was located again by all of us, and Jeffery Davey, a mile to the east over some marshy pasture lands known as Wembdon Fields. Very satisfactory views were obtained as it circled overhead, sometimes swooping down low, sometimes disappearing northward and then reappearing behind one of the many parties of Redwings (*Turdus musicus*) and Fieldfares (*T. pilaris*) passing south that day. It was in fact under observation over Wembdon Fields at intervals during a period of more than an hour and a half.

Such diagnostic characters as its exceptionally large size—appreciably larger in fact than the common Swift (*Apus apus*)—entirely pale brown colour of head, nape, mantle, wings and the well forked tail, with the whole of its under-parts white except for a noticeable pale brown band across the upper breast, were indeed most clearly seen.

This is believed to be the first record of an Alpine Swift in Somerset.

MARIE L. COLTHURST, B. CRISTINE PALMER,
CLAUDE D. PALMER AND EILEEN M. PALMER.

Black-headed Wagtail in East Lothian.—On July 2nd, 1952, at Aberlady Bay, East Lothian, we came across what proved to be a Black-headed Wagtail (*Motacilla flava feldegg*). The bird was watched for nearly ten minutes on an area of grassy saltings and the following description was taken on the spot:— forehead, crown, nape and ear coverts black with very small white crescents above the eyes; back olive-green with rump more yellowish-green; chin and throat creamy yellow; rest of under-parts bright yellow with faint buff band across breast; tail dark brown with white outer feathers; wings brown, primaries edged buff; bill and legs black.

The bird spent much of the time in one place, preening, until it was chased by a Meadow Pipit (*Anthus pratensis*). Then, after landing on a log the bird left of its own accord, flying high in a south-easterly direction without making any call. This is the first definite record for Scotland.

K. S. MACGREGOR AND F. D. HAMILTON.

[There could only be one good reason for failing to accept this clearly described record, and that is if there was any evidence that aberrant Yellow Wagtails showing the characteristics of *M.f. feldegg* had been known to occur in the West European populations, but we can find nothing to support such a suggestion and so consider the record perfectly valid. We have shown the details to Dr. Stuart Smith who agrees that it would be most unlikely for a population of *flavissima* suddenly to throw up an

aberrant of the *feldegg* type. He adds that the band across the breast points to its having been a bird moulting into first summer plumage.—EDS.]

Lesser Grey Shrike in Northumberland and Aberdeen.—On September 13th, 1952, at Monks' House Bird Observatory, Northumberland, four of us—J. H. Hyatt, C. K. Mylne, M. R. K. Plaxton and myself—were standing outside the house when a bird the size of a Starling (*Sturnus vulgaris*), but with white wing flashes and a long tail, circled rapidly round us and over the roof, closely pursued by a House Sparrow (*Passer domesticus*). It reappeared and settled first on the willow-hedge and presently on the electric cable beyond the trapping garden. We decided it was a Lesser Grey Shrike (*Lanius minor*), probably a male in first winter plumage.

On the following day, after many manoeuvres, it was taken in a spring net baited with a ground beetle, ringed (P. 5177) and examined: the wing measured 113 mm., and the tarsus 23 mm.; the 1st primary was very small, the 2nd 2 mm. shorter than the 3rd which was 4.5 mm. longer than the 4th; the 2nd was strongly, the 3rd less strongly, emarginate. The characteristic head and wing markings were as obvious in the field as in the hand, but the faint, brownish (immature male) tinge of crown, mantle and scapulars was far less obvious in the field, as also a faint creamy tinge on cheeks, throat and neck. It was infested with large numbers of mites, of which specimens were collected for determination.

During a brief spell of captivity, it ate a substantial meal of wireworms, both larvae and pupae, and produced a pellet. This was fairly firm, measured 23 mm. x 10 mm. and contained remains of beetles (*Carabidæ*) and bumble-bees (*Bombus* sp.). In the field it had been seen to feed largely upon bumble-bees, taken in the typical shrike way from some vantage point. This bird suffered a curious fate a month later, for on October 15th, 1952, it was found dead in Aberdeen, having fallen down a chimney. There are now some 30 British records of this bird, but it does not appear to have been recorded previously from Northumberland.

E. A. R. ENNION.

[The large, white wing-patches and the broad black mark through the eye—not, however, in view of its immaturity, extending across the forehead—can be seen in the photograph of this bird that is reproduced on plate 31, right.—EDS.]

Woodchat Shrike in Sussex.—Mr. D. V. Freshwater has sent us details of a Woodchat Shrike (*Lanius senator*) that he saw on June 8th, 1952, near Seaford Head, Sussex. It first attracted attention as a smallish bird showing a large amount of white in flight. When it alighted on top of a road-side post, the following

points were noted: crown and nape chestnut, broad black patch through eye, upper-parts black with brilliant white scapulars, tail black edged with white, under-parts white. Its size was about that of a Red-backed Shrike (*L. collurio*). From the lack of any suggestion of brown on the black parts of the plumage it was assumed that it was an adult male. There are some 20 previous records of the species in Sussex, but this figure represents roughly one-third of the total of published occurrences in Britain.

Scarlet Grosbeak in Somerset.—At Cheddar Reservoir, Somerset, on October 5th, 1952, the writer was attracted by an unusual finch-like bird consorting with a mixed party of about a dozen Chaffinches (*Fringilla caelebs*) and Yellowhammers (*Emberiza citrinella*) of both sexes which were seeking stray seed from a freshly gathered heap of chaff near the reservoir embankment. Its brown colour and dumpy appearance, with a strikingly stout and conical brown bill and its head set squat on its shoulders, were so unlike any bird which the writer had previously seen that the following detailed notes were made during the 20 minutes the bird was under intermittent observation at a distance of about 20 yards. Later that day *The Handbook* was consulted and it appeared evident that it was either a female or an immature male Scarlet Grosbeak (*Carpodacus erythrinus*).

The thick conical bill was always its dominant character. A little smaller than the Chaffinches and Yellowhammers, dumpy and with noticeably rounded head—showing slight demarcation where the base of the bill met the forehead. Tail shorter than those of its companions and decidedly forked. Head, nape and mantle brown; lower back and rump clear light greenish colour and unstreaked; tail brown; wings light brown with paler edges to some scapular feathers and to the secondaries—double whitish-buff wing bar; side of face pale brown; throat pale buff; deeper buff on upper neck and breast and boldly streaked, extending to the flanks; lower belly whitish, under-tail coverts clear white. Thick, conical, dark brown to reddish-brown bill, paler at the base, more noticeably pale on lower mandible; legs drab brown. Eye dark or blackish, appearing unusually large for size of bird.

From time to time the small flock, in characteristic manner, made sudden flights, then returned to the chaff or perhaps perched in a tree near by or skulked in root crops only a few yards away. The Grosbeak, however, showed some reluctance to join in and often it flew only a few yards to a barb-wire fence where it gave the writer excellent views of both the upper- and under-parts. Eventually the birds were startled by a car passing along the reservoir road and were not seen again.

The above record is believed to be the first instance of a Scarlet Grosbeak in Somerset.

BERNARD KING.

REVIEWS.

The Pocket Guide to British Birds. By R. S. R. Fitter. Illustrated by R. A. Richardson. xvi and 240 pages, 112 plates (64 in colour). (Collins, 1952). 21s.

This is a disappointing book. It is original and ambitious, and a first impression is that there is some justification in the words of the publisher's blurb: "here at last is the book to make bird identification easy", but on examination it fails to fulfil this early promise—attempts at great simplification have resulted only in complication, certain of the fundamental ideas upon which the lay-out of the book is based are open to considerable criticism and, finally, there are a number of surprising errors not only in the text but also in the plates.

The birds that have been recorded in Britain more than 50 times are included in three groups—*Land*, *Waterside* and *Water*—and within each of these habitat-categories are arranged in ascending order of size, being further grouped under the headings "Very short", "Short", "Medium short", "Medium", "Medium long", "Long", "Very long" and "Huge", each size having a type bird. Where the species is to be found in more than one of the main habitats, or where the sexes differ significantly in size, there is an adequate system of cross-references. The idea of this lay-out is based upon a very doubtfully tenable belief that size is a far easier basis for the beginner to work on than the relationships upon which the more usual systematic order is formed, but a comprehension of phylogenetical (and so behavioural) relationships is an essential, and will indeed be desired early on by anyone taking more than the most casual interest. In any case, size is notoriously misleading in the field—being one of the most difficult things to determine—and it is surely fundamentally wrong to instil into the beginner such reliance upon it.

One result of this size-order is that there are large gaps between species that the observer will want to compare—for instance, 6 pages between Partridge and Red-legged Partridge, 17 between Lesser and Great Spotted Woodpeckers, and 35 between the first and the last of the gulls. It is hardly possible to use this book without perpetual reference to the index and without a small stock of book-markers to keep places in other pages.

In the account of each bird are notes on "Plumage", "Structure", "Movement", "Voice", "Field Marks" (good), "Flocking", "Habitat" and "Range and Status", many of which are admirable examples of compressed detail. To make the most of this information, the introduction on "How to use this book" (pp. 6-15) should be most thoroughly read. Even a very careful perusal of this, however, will not prevent some from being driven to distraction by the sections on "Structure" which need constant reference to the explanatory pages. This section includes abbreviations for the proportions of "Wing-length", "Wing-ratio", "Tail-ratio", "Neck-ratio", "Leg-ratio" and "Bill-ratio"; each size has a type bird that of necessity differs in each proportion, but it is very confusing when, for example, the Heron is the type for "Very long" in two proportions, for "Medium long" in two more, and for "Short" in another.

Much of the text is good, but it is marred by a number of misleading statements and not a few surprising errors; as well as, inevitably, a quantity of omissions. The Chukor (p. 75) is *not* smaller than the Red-legged Partridge; the Whiskered Tern is *not* "white above" (p. 108); the statement that the Goldfinch (p. 22) has a "whitish rump conspicuous when flying away" is misleading enough as it stands, for only in certain lights do some of the buff-tipped whitish upper tail-coverts give such an impression, but it becomes more serious when this bird is included among "the three finches which show a white rump in flight", particularly as the line-drawing here (p. 37) shows a Goldfinch with an area of white larger than that of a Bullfinch, and at the same time a Brambling with such almost non-existent; there are other examples. Among the diagnostic features of *Streptopelia decaocto* should have been given the best of them all—the blackish primaries.

Apart from the more-than-50-times-recorded British birds, there are short accounts of those that have appeared between 20 and 50 times, and, what is in the reviewer's opinion deplorable in a book on "British" birds, the inclusion of a variety of exotic wildfowl and foreign cage-birds—even with some reference to the Khaki Campbell duck and to budgerigars.

At the end of the book is an ingenious but complicated Key, that it is necessary to have a certain knowledge of birds to be able to use at all. This occupies 44 pages with instructions and its own index; it is divided into keys for colour and pattern (there are some 70 main headings in this alone, without all the subsidiary divisions), structure, behaviour and habitat. Appendices after it include, among others, a list of occasional rarities (128)—an important point for completion—and a "Migration Table" which is not what it says, and in fact shows the months when each of the non-resident species is to be found in this country. Finally, there is the index—the most important part of this book!

A number of line-drawings are scattered about the text, but many of them seem to serve no useful purpose and some are incorrect, notably that of the white-rumped finches. The main illustration is in the form of 64 coloured and 48 black-and-white plates; in a work of this kind these form an integral part of the whole. Each colour plate includes a number of species, in many cases showing both sexes and juveniles. Birds similar in plumage and size are grouped together on one plate, with the result that a species may appear several times on different plates, perhaps many pages apart. It is therefore again necessary to turn constantly to the index, particularly as there is no reference to the text on the plates. The black-and-white pictures mainly show birds in flight, though they include the only illustrations of some pied species. On each plate appears the silhouette of a House Sparrow as a guide to size, it being supposedly drawn to scale. As remarked above, size is a very bad basis on which to build a guide to bird identification, but having chosen it, the authors should have been meticulous in ensuring correctness of proportion. They themselves, however, on page 15, have to list fifteen plates where the sparrow is slightly too large, and it is not hard to find other plates where the relative sizes are incorrect: on plate 44 the Little Bittern gives the impression of being approximately as big as the Night Heron; on plate 31 the Black Redstart is as long as the Woodchat Shrike; and so on.

Some of the plates are over- or under-inked and a few are off register: faults which seem to vary from copy to copy; faults which ought to have been avoided in a work of this kind. Some of the blues are very bad: the Jay's wing (plate 22) looks quite artificial; no Woodpigeon ever had a head the colour of the one on plate 24; the blue-grey Spotted Redshank (plate 41) is attractive, but incorrect. Apart from these technical defects, which the reviewer as a great admirer of Mr. Richardson's work is very sorry to see, there are too many other mistakes which can hardly be attributed to the printing—for example, on plate 60 the Little Gull has obviously been painted with a chocolate head of exactly the same shade as that of the Black-headed Gull with it. Similarly, the Black Guillemot on plate 59 has been given a brown head, and even a white-tinted crease behind the eye like that of the common Guillemot. The Great Crested and Red-necked Grebes on plate 110 are almost identical. The Black-headed Gull does not show correctly the white leading edge to the wing in plate 104 or 107. The Oystercatcher on plate 83 is in winter plumage without this being stated. There are other such faults.

These criticisms must not lead the reader to regard the book as anything but a prodigious piece of work that is the best thing of its kind in Britain so far—but how much better it could have been.

I.J.F.-L.

The Mandarin Duck. By Christopher Savage. Coloured frontispiece by Peter Scott, 16 plates from photographs, and text drawings by the author. (A. and C. Black, London, 1952). 25s.

This is a book which most collectors of bird books will wish to have, for it contains an excellent series of photographic reproductions of Oriental and European portraits of this bizarre bird, a coloured plate in Mr. Scott's most

felicitous manner and drawings by the author illustrating most of the activities described in the text. For the reader satisfaction is less certain. Mr. Savage set out to attempt to bring together "as much as is known of the Mandarin duck at the present day" and seems to have been successful, but for the biologist the value of his researches is much reduced by the omission of the bibliography of nearly two hundred references he has consulted, in favour of a "Selected Bibliography" so short as to be useless and so carelessly listed as to raise unnecessary doubts about the adequacy of the investigation. For the student the value of the compilation is further reduced by the intrusive proselytizing zeal of the author, and other readers who are not at once carried away by enthusiasm must also suffer the painful effects of blending the descriptive with the enthusiastic.

The account of the establishment of the Mandarin in Britain may prove of especial value, for the earliest stages in the spread of other introduced species have rarely been so well described.

H.B.

Finding Nests. By Bruce Campbell. (Collins, 1953). 12s. 6d.

In an age when so many ornithologists are for ever watching the coastal marshes and the sewage farms, and when those that do look seriously for nests are for the most part either undertaking the special study of a single species or belong to the happily decreased ranks of egg-collectors, how stimulating it is to find a book written by one who would obviously derive great pleasure from finding *any* nest even if there was little to be gained apart from the satisfaction of having found it.

The main body of this book is preceded by three chapters of a general nature. In the first—"Why find nests?"—Dr. Campbell points out that 60 years ago there was only one aim: the taking of the eggs. Now, there are four main reasons: photography, ringing, the making of a "case history" of each nest, or "all or none of these in conjunction with observations on the behaviour of the adults and the young." These reasons are discussed and particular mention is made of the British Trust for Ornithology Nest Records Scheme to which Dr. Campbell is himself one of the largest individual contributors. The author comments on the strange lack of interest shown in the breeding-cycle by many of the modern generation of bird-watchers who adopt the attitude: "Of course, I'm hopeless at finding nests"; it is very probable that this book will help to cure such apathy towards the all-important centre to a bird's world. In the second chapter Dr. Campbell divides "Methods of finding nests" into two main groups, watching and searching, and then subdivides the latter into "cold" searching for the nest itself and "hot" searching when the aim is to flush the sitting bird, going on to give some valuable hints on both: he underlines the importance to the nester of a stick (to the cited uses of which could be added its value when thrust through a hedge to mark a nest located from the other side). In this chapter Dr. Campbell also discusses such mechanical aids as the rope dragged between two observers, and outlines briefly the far more interesting (where it is possible) procedure of finding the nests by watching the birds. In the third chapter there are some very sound, cautionary remarks on "Looking at nests", and particular stress is laid upon the need for covering up one's tracks and leaving each nest as it was found. The use of ropes, climbing-irons, mirrors, torches, etc., and the ways of opening up a hole-nest are discussed here.

The second and far larger part of the book is mainly devoted to particular sections on 184 species, these being grouped in twelve further chapters. As the book "is not concerned with breeding biology, but with the finding of nests", the headings under each species are confined to "Distribution" (which is in some cases rather poorly outlined), "Season", "Habitat", "Nest-site", "Nest", "Eggs" (where considered relevant) and the main, important section on "Methods" wherein are included details of behaviour, calls, etc., where these are of assistance, as well as hints on specific methods of searching. This section is mainly based on the vast experience of the author and his father, but it incorporates some of the detailed observations in Arthur Whitaker's

notes, and methods given in J. G. Black's *Birdsnesting* and J. Walpole-Bond's *A History of Sussex Birds*. It would of course be possible for any experienced nest-finder to suggest small additions or improvements, but it would be churlish to criticize in any minor ways an excellent book that is different and contains more than enough of value and interest to be worth a place on the shelves of all interested in birds. The whole is adequately illustrated by 40 photographs on 24 plates.

I.J.F.-L.

A Country Parish. By A. W. Boyd. (Collins, 1951). 21s.

One of the *New Naturalist* series, this book goes beyond the usual range of subjects and, like E. M. Nicholson's *Birds and Men*, takes into account the activities of human beings which, as the author remarks, are the most interesting animals of all.

Two chapters devoted to birds, however, fully qualify the book for review in this magazine, and these contain a wealth of detailed information. No doubt the water birds are the most important in a county famous for its meres, but I should have preferred to find all the species of one family dealt with together, and dividing them into water birds and the rest makes for complication. It means for example that some of the wagtails and waders are to be found in one chapter and the remainder in the other.

Introducing these chapters on birds Mr. Boyd modestly writes: "I think I can at least offer a fairly accurate estimate of the avifauna of the district, the status, distribution and habits of many of the species, and the changes that have come to pass during the present century". With this statement, or understatement, no one will venture to disagree. Tree Sparrows and Swallows are two species which the author has studied intensively, and tables give details of brood sizes of Swallows in the years 1934 and 1935 when the author was the organiser of the B.T.O. census of that species, and of Tree Sparrows during the period from 1924 to 1939. Mr. Boyd has also done a great deal of ringing, both of nestlings and trapped birds, and there are maps and diagrams to show recoveries of Starlings and Greenfinches, including one of the latter which moved S.E. 600 miles to reach France.

The author writes cleverly, introducing touches of his own inimitable humour, and so making interesting reading of what is virtually a list of birds and flowers. The illustrations are superb, especially the lovely photographs in colour of scenes and flowers, nearly all taken by Mr. C. W. Bradley. The method of numbering these plates in two separate series is tiresome, but that is of course in no way the author's fault. Both Mr. Boyd and his wife, to whom the book is dedicated, are to be congratulated on a masterly achievement.

R. M. GARNETT.

COUNTY BIRD REPORTS.

Twenty-fourth Report of the Devon Bird-Watching and Preservation Society, 1951. Recorder for birds—F.R.Smith.

There are short reports on special enquiries: (a) Swift Migration.—Cold weather for 4 or 5 days in May caused such a remarkable disappearance of Swifts that "it seems feasible that for several days this species was 'grounded'". Some birds remained exceptionally late: there were several October records, and one was seen on a number of occasions from November 15th to December 3rd. (b) Black Redstarts.—There was no evidence of breeding, and although 6 birds were observed on the south coast on January 11th (1952), "an unusual feature of this year's records is the lack of evidence of any wintering birds." (c) Spotted Flycatchers.—The collection is continuing of reports of every aspect of behaviour in as much detail as possible.

The main body of the report consists of classified notes, the observations on each species being divided into areas shown on a map. Records from W. Somerset and Lundy, appearing in the Devon report, are not included in the following extracts as most of them appear in the review of the Somerset Report (*antea*, p. 146) or in the Bird Observatories Report (*antea*, vol. xlv, pp. 297-298):—

Raven observed on a sheep's back, searching for ticks; 42 in a flock on Dartmoor. Magpie is reported as increasing in all areas. A roost of c. 200,000 Starlings in E. Devon in December. A flock of 200 or more Goldfinches as early as June 28th; young still in the nest, October 13th. Over 100 Yellowhammers on October 10th. A Black-headed Bunting at Sidmouth on October 4th and 6th has already been reported in *British Birds*. Several Snow Buntings. Dozens of Pied Wagtails roosting in bracken July 28th. A remarkable increase in Long-tailed Tits makes recovery from 1947 almost complete. Great Grey Shrikes in January and November. A steady increase of Goldcrests in all areas. Unusually few wintering records of Chiffchaff. Dartford Warblers again nested successfully. Winter records indicate a steady increase in the winter population of Fieldfare. Stonechat numbers are now back to normal. Several Hoopoes in mid-April, one in August. Hobby bred. Kestrel increasing steadily. 17 Buzzards seen in the air together in December. Fewer Montagu's Harriers bred than usual. A Hen Harrier in May. Spoonbills were seen on the Exe estuary in April and May, on the Teign in January, February, April, May, October, November, December; 14 in Torbay in October; on the Tamar throughout the year except May-August. A Little Egret on the Exe estuary on June 17th; one on Erme Estuary on April 18th and 19th. Whooper Swans in January, February, October and November. Bewick's Swan in November. Brent Goose wintered on Exe estuary in both seasons, maximum 38 birds; 99 Pintail there on October 28th. The report of a Ferruginous Duck on Exe estuary on July 1st was also submitted to *British Birds*, but was not regarded as absolutely certain. A Long-tailed Duck wintered. Eiders were seen in January on both N. and S. coasts. Up to 10 Fulmars at Berry Head but no eggs, June 6th. Several Slavonian Grebes. Up to 6 Great Northern Divers together. Black-tailed Godwits, Common Sandpipers, Green Sandpipers, Spotted Redshanks, Greenshanks, Kentish Plover and Avocet all wintered—a remarkable list. A Pectoral Sandpiper in September; one is also recorded on the exceptional date of February 11th, but unfortunately does not appear to have called, flown, or shown the colour of its legs. Roseate Tern in May. Glaucous Gulls in January, March/April and December. Iceland Gull in December.

P.A.D.H.

Wiltshire Bird Notes for 1951. (From *The Wiltshire Archaeological and Natural History Society Magazine*, vol. liv.) Recorders for birds—Ruth G. Barnes and Guy Peirson.

Although the county, lacking a coast line or any large areas of water, does not attract many rare species, stress is rightly laid in the editorial on the need for critical consideration of all unusual records.

We note the following :—

Raven in January and November, a Hooded Crow seen as early as August 19th. Starlings going to a roost $1\frac{3}{4}$ miles distant actually flew through flocks circling over another roost. A Snow Bunting in January. Several variant Yellow Wagtails in April and May as well as one of the Blue-headed race. A Treecreeper nested on a corrugated iron shed. Nuthatch climbing over the face of a brick-built house. Great Grey Shrike in April. A number of Pied Flycatchers in spring. A Firecrest on March 19th, 1943. Several Ring Ouzels on passage. An undated Hoopoe. Great Spotted Woodpecker had large young by April 15th, a very early date. 2 or 3 records of Long-eared Owls nesting. Hobbies and Buzzards bred, and Peregrine and Montagu's Harrier were seen in summer. Several Bitterns in winter and a party of Whooper Swans in April. Garganey in April and October. Sheld Duck, Cormorants, Storm Petrel, Red-throated Diver, Oystercatcher and Puffin came inland. A movement of Woodpigeons lasting 3 hours and comprising about 2,400 birds was seen on December 27th. There is a report of 2 pairs of Curlew in spring over a breeding area in S. Wilts., but this cannot be reconciled with a statement in the introduction that "the

Curlew still manages to present a successful challenge to those who try to find out how commonly, if at all, it nests in Wiltshire." Golden Plovers in the breeding plumage of the northern race were seen in mid-April. Two Dotterels are claimed. Several winter or spring records of Great Black-backed Gull. A few Corncrakes were heard, but no indication is given of breeding. Several Quail reported and one nest found.

In addition to the classified notes there is a report on the Redstart, based on 3 years' observation by a number of members of the society, which points to a fluctuating rather than decreasing population. The map accompanying the report shows not only the sites of Redstart's nests, but also the homes of the main observers, which is a useful qualification. P.A.D.H.

Ornithological Notes, Bristol District, 1951. Reprinted from *The Proceedings of the Bristol Naturalists' Society*, vol. xxviii. Compiled by H. H. Davis.

The observations of this society cover parts of N. Somerset and S. Gloucester, but the actual area is not specified. A good working arrangement seems to be in operation with the Somerset Society for the exchange of interesting information: it is therefore only necessary here to notice S. Gloucester records:—

Ravens were seen in January and December. A bird at the New Grounds described as "a robin with a blue breast with a red spot in the middle" is recorded as a Red-spotted Bluethroat. A Hoopoe in August. Several autumn and winter Peregrine records. Several Hobbies seen. Buzzards reported from widely separated localities, the records covering all seasons of the year; it seems likely that the species is now breeding in S. Gloucestershire. A Hen Harrier in November. Concerning geese at the New Grounds, White-fronted reached a maximum c. 3,700 in January, last seen March 21st, returned September 30th; family parties of Greenland White-fronted were seen in January and February; Lesser White-fronted were present from January to May, total 6 birds; one Bean in October; Pink-footed left in mid-March, returned October 13th, maximum 120 on October 26th; one Barnacle in January; one Brent Goose in October. On the Severn estuary there were 90 Pintail in February, 70 in December. Several Black-tailed Godwits in April, May and August. Common Sandpiper in mid-winter. A Little Crake at New Grounds in April. Quail heard on August 5th. P.A.D.H.

Montgomeryshire Field Society, Report and Notes, 1951.

The short list of systematic notes on birds includes the following: One pair of Choughs in the county. A pair of Golden Orioles seen again. A small party of Waxwings on November 17th. A Bittern on January 6th. 700-1,000 White-fronted Geese, January and March. Several pairs of Corncrakes bred.

J. H. Owen contributes notes on 127 Spotted Flycatchers' nests found during the season: particular attention was paid to nest site and composition, and to clutch size (average 4.11 eggs), and nesting success (average 2.7 juveniles, i.e. 66% success). The same observer analyses the causes of failure to hatch (17.8%) and failure to rear young (13%) in well over 100 Robins' nests found in 1951. P.A.D.H.

West Wales Field Society: Report for Year Ending 31st March, 1952.

Two or three pages are devoted to ornithological matters. Of particular interest is a short account by Capt. H. R. H. Vaughan of the Kite in 1951. There were certainly 11 nesting pairs, probably 15, which represents a slight increase in the last two years. Young birds flew from 6 nests; between 20 and 30 young have reached the flying stage in the past three seasons. The good work done by the Kite Field Committee deserves wide support.

The Gannet population of Grassholm was estimated at about 8,000 nests on May 11th. P.A.D.H.

Herefordshire Ornithological Club, Annual Report, 1951. Edited by R. H. Baillie.

It is a pleasure to welcome this report which summarizes the first full year's observations made by a club that was formed only in 1950, the more so as from 1952 onwards it is also taking on the task of covering neighbouring Radnorshire, so that of the six counties forming the triangle Hereford-Glamorgan-Montgomery only Brecknock remains in need of a periodical publication on birds. Though much of Herefordshire is of the midland agricultural type, parts are hilly or mountainous resembling the Welsh counties on which it borders, and thus it presents a varied habitat.

The report is mainly devoted to 9 pages of classified notes based on the observations of 22 observers, and there is also a 3-page article on "Bird Ringing" written with the intention of giving "some indication of the importance and interest" of this work. A page entitled "Annual dates of interest in the county" consists in the main of the average arrival dates of some of the summer migrants in or near Hereford itself between 1931 and 1951. The results would be of greater significance if the range of dates of each species were given, but such averages are of little value unless based on the observations of a number of observers over a wide area daily covered.

We extract the following from the classified notes. Raven "is on the increase and is slowly spreading eastwards from the Welsh border." Bramblings near Kington reached a maximum of 200 or more in the latter half of January. A Great Grey Shrike on the unusual date of September 27th deserves the support of the observer's own description. Red-backed Shrikes bred successfully at Hereford; also reported in three other localities in the county. Reed Warblers in two places, 4 birds and a pair (this is almost the western limit of the species' range in Britain). Marsh Warblers at 3 sites; young known to be reared from 2 nests. Male Black Redstart at Hereford Cathedral from December, 1950, to March, 1951. Records are given of the very locally-distributed Nightingale. Brood of Swallows left nest on October 18th. Hobbies bred successfully. The occurrence of a Kite is very vaguely noted without date or locality, and the wording suggests that it was not even seen by the observer whose initials are given. This last comment also applies to the Osprey "reported to have visited Shobden for one day in April" (which should certainly have some supporting evidence) and the Mute Swan "reported to have taken off from a small pool with two cygnets on its back." Corncrakes in 2 localities, at one of which the species "has been heard annually for the last three years." The status of several species that suffered in the hard winter of 1946/47 is reviewed and Treecreepers, Long-tailed Tits, Green Woodpeckers, Little Owls and Coots are all reported as having made a partial or complete recovery, but Goldcrests are still very local (though common again in the Kington area).

It would have been particularly useful if this first report had included *all* species seen during the year, the more so because the classified notes are full of surprise omissions and inclusions, and it is therefore unusually difficult to know whether a bird has been left out as being too common or on account of a total lack of records. There are, for example, some elaborate figures on Lapwing, but no mention of the Curlew; Siskins are included, but what of Redpolls? If the remarks on Wood Warbler are worthy of inclusion, so should be something about Blackcap and Garden Warbler. A scarcity of Barn Owls is remarked, and there are some notes about the Little Owl, but one is left to wonder about the Long-eared species. The status comments given for Grey Wagtail, Dipper and Song Thrush are hardly worth including unless such comments on all species are made. It cannot be over-emphasized how carefully these local reports must be compiled so as not to give a false impression to the reader.

I. J. F. - L.

The Liverpool Naturalist's Field Club: Proceedings and notes for 1951.

THE bird notes include an account of the breeding of the Pied Flycatcher

in Wirral, the first record for Cheshire, although one pair probably nested in the east of the county in 1948 (*vide, antea*, vol. xlii, p. 57 and vol. xlv, p. 289). A Harrier, believed to be a Montagu's, was observed at a distance of 12 yards at Kirkby, Lancs., on April 17th; it lacked the white rump of the Hen Harrier. There is only one other record for Lancashire (in 1874). Other birds rarely seen in Cheshire were Eider on December 31st and 5 Roseate Terns on September 9th. A note by T. S. Williams on summering of Oystercatchers in the Dee estuary shows that in 1951 about 500 remained during June and July. A.W.B.

Derbyshire Archæological and Nat. Hist. Socy. Ornithological Record for Derbyshire, 1951. Compiled by W. K. Marshall.

A Golden Oriole seen in the N.W. of the county on July 24th, is apparently new to the county. There are a number of records of the Pied Flycatcher in April and May, but no nest was found in the year. A continued increase in the numbers of the Nuthatch is paralleled by a similar increase in other counties in N.W. England. Buzzards were seen in May, August and September, and an Osprey in May. A Black-throated Diver was seen at Buxton in November and a Grey Phalarope at Barbrook from August 31st to September 2nd. From one to three Dotterels were seen on Big Moor for the first nine days of September. A careful table showing the numbers of waders, etc., at Barbrook reservoir shows that this place does not attract many of the normal migrants in autumn. A.W.B.

The Peregrine: A publication of the Manx Field Club. Vol. 2, No. 1, (September, 1952). Edited by W. S. Cowin.

BIRD notes cover the years 1948 and 1949. A Firecrest, a bird new to the Isle of Man, was killed against the Douglas Head Lighthouse on March 31st, 1948. Among other interesting records is one of a young Golden Eagle on October 9th, 1949. As the Editor points out, the distance to a nesting-site in Galloway is not great. An early Sand Martin was reported on March 10th, 1948. A Bullfinch, a bird rarely noted in the island, came to Douglas Head Lighthouse on October 28th, 1949, and Pied Flycatchers were twice recorded in the autumn of 1949. Red-necked, Slavonian and Black-necked Grebes are all recorded in both years. About 25 pairs of Herring Gulls formed an inland colony at about 1,000 feet above sea level in 1951 and many successfully reared broods. A.W.B.

Report on Birds observed in Hertfordshire in 1949. By J. N. Hobbs. (In the *Trans. Herts. Nat. Hist. Soc.*, vol. xxiii, part 5).

It is much to be regretted that this report was not published until 1952. It consists of some 7½ pages of classified notes based on the records of 23 observers and these are preceded by a page of introductory remarks. The Mecca for ornithologists in Hertfordshire is of course the area of the Tring reservoirs and it is not surprising therefore that two-thirds of the records in this report should come from there. Ducks noted in the county, mainly at Tring, include Gadwall in January, Garganey March-May, a pair of Wigeon until the end of May, Pintail, Shoveler "present . . . during the breeding season," Goldeneye, only 1 record of Goosander (November), very small numbers of Smew at each end of the year (the numbers of Sawbills visiting Tring have dropped considerably). Among waders, Jack Snipe in April, Curlew Sandpipers in August and September, Little Stints in May and August, Sanderling in July, Ruff at both migrations, Greenshank in autumn, and several records of Little Ringed Plover may be mentioned. The occurrence of a party of 15 Oystercatchers so far inland in the south is distinctly uncommon. A record of Grey Plover well inland is sufficiently unusual to justify the inclusion of at least the name of the observer. Various records of gulls and terns include Sandwich Terns in April and September.

Cirl Bunting and Woodlark are stated in the introduction to have been seen at Sarratt and West Hyde "under circumstances which make breeding very probable if not certain," but the evidence given in the classified notes is only that of date. A total of some 11 pairs of Red-backed Shrike are noted. Waxwings in March and December. Under "Greenland Wheatear" two lines are devoted to the mention of a bird that was "perched high in a tree" and *ipso facto*, it seems, assignable to this race: no other evidence is given; the statement in *The Handbook* about tree-perching has led to far too much stress being laid on this as a means for the field-separation of the Greenland form. A Black Redstart is recorded in April. There is an interesting account of the eviction of a pair of Nuthatches from a previous year's hole by Great Spotted Woodpeckers and the latter's subsequent breeding in it. Slavonian Grebes are recorded in January, and Black-necked in May and June. The occurrence of a Black-throated Diver in winter constitutes a sufficiently critical and uncommon identification to warrant the inclusion of full details, but these are missing from a January record in this report. A Corncrake is recorded in September. Full details of a Spotted Crake in April are given, and another is noted for August. Quails were seen in May and September and one was shot in January. I. J. F.-L.

Natural History Society of Northumberland, Durham and Newcastle-upon-Tyne: Ornithological Report for 1951. Edited by G. W. Temperley.

ONCE more over 100 contributors have supplied notes for this full report. There are many items of particular interest.

A Red-breasted Flycatcher was seen on the spring passage for the first time and another in October. A Yellow-browed Warbler, the first for Co. Durham, was closely examined in October between the 4th and the 28th. A Pallas's Warbler, previously known as a British bird from one occurrence in Norfolk was trapped and examined by Dr. E. A. R. Ennion at Monk's House on October 13th (*vide, antea*, vol. xlv, pp. 258-260). An Aquatic Warbler, another bird new to these counties, was seen near South Shields on August, 28th. A Baldpate, the first recorded in Northumberland, was shot on November 8th. Other unusual records were those of Hoopoe, Lesser Spotted Woodpecker (probably nested), Wryneck, Golden Eagle, several Ospreys and Spoonbill. Montagu's Harriers returned, but were not proved to have nested; it seems probable that the hen was shot. A very considerable and gratifying increase in the number of Corncrakes is recorded. A pair of Great Crested Grebes bred successfully for the first time since 1934. A.W.B.

LETTERS.

THE NAME "ARMORICAN WARBLER."

To the Editors of BRITISH BIRDS.

SIRS,—A good deal of interest, and even some feeling, seems to have been aroused by the question whether in the Channel Islands the English name "Armorican Warbler", instead of "Dartford Warbler", can be properly applied to the race found there, *Sylvia undata armorica*. Surely the approach should be from the general to the particular. The first thing to decide is the point of principle, whether English names should attach to species or to races.

(1) The present tendency seems to be a strong swing back to the use of English names for species, although a very few exceptions such as "Pied Wagtail" have become so firmly embedded in the language as to be practically unavoidable. On this basis the English name "Dartford Warbler" applies to *Sylvia undata* as a species and therefore covers all its races. The question of appropriateness is irrelevant, and impotent against the force of custom: the Caspian Tern is to a British ornithologist always a "Caspian Tern", whether he meets it in the Baltic or in West Africa; and so also with Sandwich Tern, Kentish Plover, Manx Shearwater and others, irrespective of race.

(2) Alternatively, English names can be attached to races. On that basis

"Dartford Warbler" could be regarded as the name of *S. u. dartfordiensis* alone; and ornithologists in the Channel Islands, as the only English-speaking ones within its range, would be free to give another English name to *S. u. aremorica*. So also, ornithologists in Gibraltar might give an English name ("Tony Warbler"?) to the North African race occurring in southern Spain, *S. u. toni*; anyone wishing to use an English name for the nominate race would then presumably call it the "Undate (or Undulating) Warbler", and a small prize might be offered for an English equivalent of *S. u. tingitana*. There is, however, another school of thought, which likewise applies English names to races but builds them up on a kind of trinomial basis: this would give us something like "British Dartford Warbler", "Armorican (or Western?) Dartford Warbler", "North African Dartford Warbler", "Continental (or Provencal?) Dartford Warbler" and "Atlas Mountains Dartford Warbler" (for the races in the order in which they have already been mentioned). Either process, if given full scope, seems to reduce itself to absurdity; and there are other possibilities too pedantic to contemplate, such as "Dartford Undulating Warbler" and so on (as before).

I confess to a strong personal inclination towards applying English names wherever possible to entire species, preferring for the purpose those names which have grown naturally as part of our language.

A. LANDBOROUGH THOMSON.

[Since our *Editorial* on the subject (*antea*, pp. 1-3) we have received a number of letters about the English names of birds and we regret that the great majority of these cannot be published through lack of space. Sir Landsborough Thomson's letter is reproduced here, however, as it has a bearing on the important principle that English names should apply to species, and not to separate geographical forms. All the suggestions in the other letters are being carefully considered, and we hope in due course to give a summary and discussion of the more important points.—EDS.]

NOTES ON ISLAND WRENS.

To the Editors of BRITISH BIRDS.

SIRS,—When I pointed out the morphological distinctiveness of Fair Isle Wrens (*Troglodytes t. fridariensis*) from the Shetland stock (*T. t. zetlandicus*), the type-locality of which is less than 30 miles distant from Fair Isle, I gave as a comparable example of the efficacy of a water-barrier in limiting the distribution of wrens the case of *T. t. alascensis* of the Pribilof Islands, which, though breeding commonly on St. George, occurs only as a vagrant on St. Paul 27 miles away (*Ibis* (1951) 93: 599-601). The Rev. E. A. Armstrong, in his recent interesting study of the Hebridean Wren (*T. t. hebridensis*) (*antea*, pp. 37-50), considers that this example lacks cogency, though why is not clear, since the new evidence he brings forward does not indicate that the situation on these two islands has changed in any important respect. From the context of his remarks it would seem that Dr. Karl Kenyon's observations refer to vagrancy, and that a breeding-population of *T. t. alascensis* is still not established on St. Paul.

A water-barrier, whether 25 or 2,500 miles wide, does not prevent vagrancy: the test is whether or not such a barrier effectively prevents the establishment and consolidation of breeding-colonies. Even with markedly sedentary populations vagrancy may occur, as witness the trapping at Fair Isle on October 7th, 1952—with a northerly wind at force 4—of a wren indistinguishable from *T. t. zetlandicus* on comparison in the laboratory with adequate series of this and the insular forms. Identification of this bird as an example of the Shetland race is strongly supported by the fact that wing and tail measurements—53 mm. and 37 mm. respectively—are greater than those of any wren we have trapped to date.

Mr. Armstrong takes the view that the more severe climate of St. Paul and not the efficacy of the water-barrier is the limiting factor in the distribution of *T. t. alascensis*, but he does not develop his theory further, in spite of the fact that there are manifest objections to it. By "severe" one understands a

climate of continental rather than maritime type, in which prolonged periods of cold, with hard frost and snow, occur. The maritime climate, on the other hand, is characterised by mildness of temperature, higher humidity and greater rainfall, and frequent strong winds. In my experience this type of climate is a far greater menace to insular populations of the wren than the severe continental type, as the following evidence shows.

During late July and early August, 1947, I found the Faeroe Wren (*T. t. borealis*) more abundant on the several islands I revisited than at any period between the years 1942-5, and in so far as Nólsoy was concerned my friend Niels Petersen á Botni agreed that this was so (*Dansk. Orn. Foren. Tidss.* (1948) 42: 208). Its abundance was striking testimony of this small bird's ability to withstand the most rigorous weather conditions, for the early months of 1947 had been of unparalleled severity. As a result of the prevailing polar anticyclonic conditions, however, these months were unusually gale-free, so that the wrens were able to exploit their chief feeding ground—the unfrozen inter-tidal zone and the adjacent cliffs—to the fullest extent.

Fair Isle has not had a "severe" winter for a number of years: the past three seasons have been comparatively mild, extremely wet, and marked by a preponderance of high winds. The number of wrens has decreased alarmingly over the period, as can be seen from the following table, in which the annual totals of birds trapped each year are used as an index of population. If the population had remained constant, then the number trapped ought to have increased (as in 1948-50), since additional traps were built and old ones improved in each year. Moreover, in 1948-50 there was actually an "overflow" of breeding wrens to inland localities, but we have not observed an inland pair since.

Total wrens trapped ...	1948	1949	1950	1951	1952
	12*	24	35	7	6
	*autumn only.				

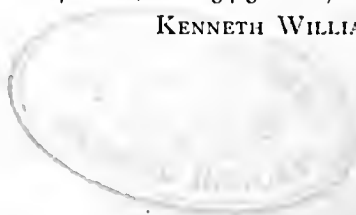
It is interesting to note that each of the past two winters has produced a hurricane (January 15th, 1952, and January 31st, 1953) which caused the island wrens to desert their normal biotope on the cliffs and beaches and appear in unusual strength for a short time in the crofting area (James A. Stout, *in litt.*). These movements seem likely to be due to one or both of two causes—stormy seas seriously restricting their feeding activities, or the danger of being drifted away from land in the high winds. This fate seems in fact to have befallen many of the Fair Isle House Sparrows (*Passer domesticus*) of the more sheltered crofting area during the hurricane of 1951. The contention that a severe climate, in the orthodox sense, is inimical to the survival of stocks of island wrens receives no support from the evidence presented here.

When I made my taxonomic study of the island wrens of the north-eastern Atlantic region (*op. cit.*) I was unable to locate specimens from Orkney in fresh autumn dress. Through the kindness of Professor Callan of the Zoological Department of St. Andrew's University I have now been able to examine four specimens taken at the Pentland Skerries Lighthouse in late October, 1915. I have compared these with a series of Norwegian Wrens (*T. t. bergensis*) collected as autumn migrants at Utsira, south-west Norway, and kindly loaned to me by Dr. Holger Holgersen of the Stavanger Museum, and also with Fair Isle, Hebridean and mainland wrens. Three of the Pentland Skerries birds are most like the typical race (October 21st-23rd, wing 44-46 mm., bill 12-13 mm., tail 28-29.5 mm.), and these may be migrants; the fourth is bigger and very near the Hebridean series on the plumage of the under-parts (October 25th, wing 49 mm., bill 14 mm., tail 30 mm.), and it may be an Orkney bird. Dr. Finn Salomonsen regarded Orkney birds as *T. t. hebridensis* (*Journ. für Orn.* (1933) 81: 100-7). An autumn bird from Hoy High Lighthouse, in the British Museum collection, is of the typical race; and of the two I have seen from Foula, Shetland, one in the British Museum is a migrant *T. t. troglodytes* and the other, in the Royal Scottish Museum, is *T. t. zetlandicus* (October, 1920, wing 51 mm., bill 14 mm., tail 34.5 mm.).

KENNETH WILLIAMSON.

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23 JUL 1953



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BRITISH BIRDS

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FIELD OBSERVATIONS ON THE BIOLOGY OF THE MARSH TIT.

BY

AVERIL MORLEY.

FOUR previous papers have appeared in *British Birds* giving the results of field observations on the biology of the Marsh Tit (*Parus palustris*), based on a study of colour-ringed and some unringed individuals in a 50-acre tract of West Wood, Bagley, N. Berkshire. The study was begun in 1938 by H. N. Southern and continued from 1939 to 1942 by the present writer, who wishes to record here her great indebtedness to Mr. Southern's constant advice and encouragement. A joint paper (Southern and Morley, 1950), described the study area, the techniques of marking, survivals of individuals marked, and recorded the histories of the territories they occupied. Pair-formation and persistence (Morley, 1950), courtship-feeding and coition (Morley, 1949) and reactions to baiting (Morley, 1942) have been the subjects of the other papers.

The present paper contains the following sections:

- (1) Social life.
- (2) Songs and call-notes.
- (3) Aggression and territorial behaviour.
- (4) Breeding behaviour (other than that already described).
- (5) Notes on roosting behaviour.

(1) SOCIAL LIFE.

The social life of the Marsh Tit begins when it is a nestling and continues after it fledges, when the brood moves into thick canopy or dense scrub and continues to be fed by the parents. Very soon after fledging, usually early in the month of June, mixed flocks of tits are again in existence, the earliest date recorded being June 7th, though it is highly probable that it is sooner than this in a year when fledging takes place early. Flocking behaviour with other species evidently varies in the geographical range of the Marsh Tit, as Payn (1929) recorded an absence of sociableness in Marsh Tits in Corsica and France, except sometimes with the Willow Tit (*Parus atricapillus*).

Colquhoun and Morley (1943) in their work on vertical zonation

in West Wood, found that the flocks from October, 1941, to April, 1942, averaged 11 birds, with a range of 3 to 30, which is not a large maximum and would be exceeded in other conditions. The average incidence of 1.6 of the Marsh Tit in these flocks showed great constancy in the period, with a maximum of 2.2 (in October) and a minimum of 1.2 (in March). It was apparent from the colour-ringing of four species of tit in this wood that some individuals of the various species make up the same flock in successive years, which is to be expected when it is remembered that the flock's activities take place on the territories of these individuals.

It is well known that in many social species of birds each individual has its place or ranking in the society, making it dominant or subordinate to other individuals. The flocks in West Wood showed also a ranking between the various species of tits and other birds, based on size and hence physical power, for it ran from the largest downwards, thus: Nuthatch (*Sitta europæa*), Great Tit (*Parus major*), Blue Tit (*P. caeruleus*) and Marsh Tit, Coal Tit (*P. ater*). The Great Spotted Woodpecker (*Dendrocopus major*) took precedence over the Nuthatch when it was present. These results were mostly obtained from the birds' behaviour at bait spread for them, and thus the position of Long-tailed Tits (*Aegithalos caudatus*), Goldcrests (*Regulus regulus*) and Tree-creepers (*Certhia familiaris*) could not be safely determined, as they were not attracted by the nuts. However, Blue Tits were seen to dominate Long-tailed Tits at natural food. Marsh Tits also made intimidatory flights at Robins (*Erithacus rubecula*) feeding at bait, and occasionally chased Chiffchaffs (*Phylloscopus collybita*) attached to the flock in March. All Marsh Tits, whether territory-owners or landless, were dominant over Coal Tits at the bait. Wing (1946) found an inter-specific ranking order in mixed winter flocks in N. American woodland.

LANDLESS MARSH TITS.

The fledglings joining a flock are landless birds, as distinct from their parents which are territory-owners, and are invariably subordinate to those with territory. The dominance of the territory-owners was shown not only at the bait, but when competition arose over natural food. But among the landless birds themselves there appears to be still another ranking, based on the quality of aggressiveness, and thus perhaps physiological in origin. In Table 4 it will be seen that the incidence of aggression rises to a peak in August. This rise is due to the incessant squabbles among the landless birds while living with the flock. They are restlessly aggressive among themselves, and though they make no conspicuous calls, they posture and drive and dash at each other. A common call made by the attacker was a high,

tuneless, rapidly uttered but quiet *tit-it-it-it* cry. Sometimes one particular flock bird was responsible for most of the sallies upon the others. The quietness of the notes called, the small size, and inconspicuous plumage of the birds, and the denseness of the summer foliage combined to make these squabbles very much less obvious than territorial disputes. Odum (1941) found a similar aggressiveness among immature birds in late summer and autumn flocks of the Black-capped Chickadee (*Penthestes* (= *Parus*) *atricapillus*). He inferred that these chases and fights were performed with the object of establishing dominance and the place in society of the juveniles. Foster and Godfrey (1950) record much song, chasing and aggressive display between 2 broods of Willow Tits in June.

The landless Marsh Tits did not attack the territory-owners accompanying the flock while it was in their boundaries, but on those occasions when an aggressive flock bird so far forgot itself as to threaten an owner, a very slight posture, such as a stiffening or slight stretching of the body, on the part of the owner seemed sufficient to warn off the flock bird. Thus a Marsh Tit had three positions in society: firstly, according to its species in the tit flock; secondly, according to whether it owned land or was landless; and thirdly, social dominance among the landless, or for the landowners, dominance according to sex (Morley, 1950), for the Marsh Tit mostly agrees with Shakespeare's dictum in *The Comedy of Errors* that "the winged fowls Are their males' subjects and at their controls."

After August, the strife among the landless birds waned. They travelled quietly round with the flock, normally unmolested by the territory-owners and remaining inconspicuous. They passed freely with the flock from one Marsh Tit territory to another, and, unlike trespassing territory-owners, they had no fear of the owners. I recorded two cases in which a landless bird showed greater attachment to a pair of territory-owners than to a flock, habitually remaining with the pair while the flock moved on. But the landless birds never defended borders and took no part in territorial disputes between neighbouring pairs. Landless birds were occasionally known to change from one flock to another, but this appeared unusual. In one case, the bird in its new flock area carried off bait to the side nearest its old ground, just as a territory-owner usually carries bait procured from its boundary back in the direction of its territory's centre.

The call notes of the flock birds were usually restricted to the ordinary flock note, *tit*, *sip*, etc. They were not even noted to call the vehement *pitz* by which a Marsh Tit is so commonly detected in a flock of tits; and they did not utter the loud, diagnostic *pitchou*. The *tit* notes were occasionally run into a sequence of excitement notes. The aggressive chase note has

been described. A churring note (to be discussed in section (2) of the paper) syllabled as *cher-cher-cher* was heard in connexion with trapping.

RELATIONSHIP OF TERRITORY-OWNERS TO THE FLOCK.

The territory-owning Marsh Tits travelled with the flock while it was passing through their ground, but dropped out unobtrusively at the borders of their territory. This behaviour is comparable with that of the drongo *Dicrurus a. adsimilis* in Northern Rhodesia recorded by Winterbottom (1943), and Ruttledge (1946) suggests that the Irish Coal Tit (*Parus ater hibernicus*) has a somewhat similar social structure. He observed that certain birds of that species appear to hold territories throughout the year and defend them with song in the winter, "but no exception is taken to other Coal Tits passing through the territory when members of the 'hunting bands' of small birds." The Blue Tit (Colquhoun, 1942) tolerates other territory-owners in its territory while they remain subordinate and the dominance of the owner is accepted by the visitors. The further an owner moves from its territory, the lower it sinks in the social dominance scale. This system is slightly different from the Marsh Tit's, where the territory-owners are not normally allowed into each other's territories even in a subordinate position. The territory-owners accepted the presence of landless Marsh Tits, over whom they were dominant, but at all times of year ejected territory-owning neighbours which encroached on to their ground with the flock. I once saw a Marsh Tit fly 60 yards to a neighbour in a flock in order to eject it. Territory-owners were seen to turn back of their own accord from their boundaries when their neighbours came in sight, though the latter appeared unaware of the presence of the trespassers. Owners also showed reluctance to enter neighbouring territories, and hung back, when I spread bait within their sight in a neighbour's ground, while the landless birds showed no such hesitation.

Occasionally, when a pair of Marsh Tits attacked their neighbours trespassing in a flock, the whole of that flock turned with the retreating pair and returned with them to their ground.

GENERAL NOTES ON THE FLOCK.

Odum (1942) found that the chickadee flocks travelled at an average speed of 1425 feet an hour. I made only seven observations on the pace of the flock in West Wood, and these averaged 1174 feet an hour. The flock's pace and the size of the area over which it wandered appeared to have some connexion with the presence or absence of Long-tailed Tits, which species gave the impression of being more rapid foragers and of moving over a larger area, but flocks had their own individual rounds, according to the evidence of colour-ringing. When two flocks were

occasionally seen to meet they did not mingle, but separated out with much excitement and calling, and each streamed back towards its respective area.

The behaviour of members of the flock influenced other members, for instance, strong alarm notes and fear reactions from one or more birds made others even of different species pause and look round. It was not unusual to find noisily quarrelling Marsh Tits accompanied by one or more interested Blue Tits, and *vice versa*.

Table 1 shows the percentage of the observed population recorded in a flock, and it will be seen that from June to January the bulk of the birds seen were in a flock. Table 2 shows that this was not due to a greater preponderance of landless flock birds.

TABLE 1: ATTACHMENT OF MARSH TITS TO *Parus-Sitta* FLOCKS.

Month	No. of records of birds in flock	No. of records of birds out of flock	Percentage of records of birds in flock
June	33	11	75
July	27	4	87
August	64	8	89
September	30	4	88
October	85	18	82.5
November	101	34	75
December	93	16	85
January	75	32	70
February	80	89	47
March	89	123	42
April	14	197	6.5
May	0	140	0

In this and in some subsequent tables the Marsh Tit's year is reckoned as beginning in June, at the end of the breeding-season.

TABLE 2: RATIO OF TERRITORY-OWNERS TO LANDLESS MARSH TITS, 1939-42.
Landless birds = 1.

	June	July	Aug.	Sept.	Oct.	Nov.
Total no. records ...	1.3	1.3	2.1	1.8	7.2	5.1
	Dec.	Jan.	Feb.	Mar.	April	May
Total no. records ...	3.7	4.0	5.6	15.6	—	—
	141	125	197	233	196	131

It is obvious that the flock is of great importance to the Marsh Tit, landless or territory-owner, but it is not so easy to state what are the advantages of the flock. Attempts have been made to reason that attachment to a flock aids food-gathering, but there is no evidence that birds find less food when alone, while the vertical zonation of the flock tends to separate individuals of different species so that their feeding-grounds are somewhat distinct. Wallace (1941) suggests that loose flocks may give individuals some immunity to predation, as an alarm signal from one would offer timely warning to the others. But in my opinion the flock's greater vocal and visual conspicuousness carries with

it added danger. The predatory Sparrow Hawk (*Accipiter nisus*) was not seen to attack solitary individuals or pairs of Marsh Tits in West Wood, but occasionally swooped on to the flock.

The Marsh Tit uses the flock as a refuge, for when a lone pair were disturbed on their territory they would frequently fly to the flock if it was within their borders, instead of to denser or higher cover. It has been noted previously (Morley, 1950) that the flock forms a reservoir for some replacements of lost mates among the territory-owners.

In very cold weather, such as in January and February, 1940, the flocks in West Wood appeared to exert a greater pull on their members; instead of being loose accretions each flock coalesced into a tighter ball of individuals moving through the branches, and their members were then less easily detachable by means of bait, nor were they recorded at a bird-table c. 25 yds. from the wood edge which some individuals occasionally visited. Yet in such cold periods the birds would seem to stand in greater need of auxiliary feeding.

Table 1 shows that the attachment of the West Wood Marsh Tits to the *Parus-Sitta* flocks receives a severe jolt in February and a more devastating one in April, when life with the flock becomes negligible. But though the flock finally disintegrates, it must be remembered that there is no complete scattering of the individuals which made it. Many are still in each other's company, nesting a few yards apart. And in cold spring weather the flock is always apt to reappear. On April 23rd, 1941, when the maximum temperature at the Radcliffe Meteorological Station was 8 degrees below the monthly average, a pair of Marsh Tits and a pair of Coal Tits foraged together as a small flock. The female Coal Tit was making the wheezing "food-begging" cry of a female in breeding condition.

(To be continued in the August number.)

THE MIGRATIONS OF THE LESSER BLACK-BACKED GULL.*

BY

J. A. G. BARNES.

INTRODUCTION.

THE following report covers the summer extension of an Enquiry into the status of the Lesser Black-backed Gull (*Larus fuscus*) which was opened in November, 1949. Owing to the promising response to the announcement of this enquiry by the British Trust for Ornithology it was decided to extend it in 1950 to cover the migratory movements of the species in the British Isles, as pub-

*A Report to the British Trust for Ornithology.

lished accounts of these movements show considerable difference of opinion with regard to dates of arrival and departure and routes followed.

Although the extension produced a few admirably detailed records the material sent in was, on the whole, less helpful than the data received for the preceding winter, and did not cover the British Isles as adequately. It is not altogether surprising that comparatively few observers were able to keep notes of the movements of a single species through the summer, and the organiser is sincerely grateful both to those who did so and to those who contributed information on other aspects of the Enquiry.

In view of the limited number of daily records it has not been possible to trace any definite waves of migration in 1950 or to correlate movement with particular weather conditions, but some useful information has been collected on the duration, routes and manner of migration, on the occurrence in the British Isles of dark-mantled birds apparently of the Scandinavian race (*L.f. fuscus*), and on individual variation in size, plumage and colour of soft parts. The details supplied by contributors of migratory movements in 1950 are summarised in a monthly survey, in which the notes are arranged in the order of the vice-counties in the *New Naturalist* map, beginning with south-west England. It should be emphasized that the lack of records from some districts for the whole or part of the year may be due to a shortage of observers rather than to the absence of birds, and allowance has been made for this fact in drawing conclusions from the data.

MONTHLY SURVEY, MARCH-OCTOBER, 1950.

March.

The winter enquiry showed the first definite immigration on February 17th in Cornwall and at Worcester, and before the end of that month new arrivals had been reported in Pembrokeshire, Devon, Suffolk, Cambridge, Lancashire and Westmorland. The movement increased in March, with immigrants at Bristol (25 adults and 2 immatures on 14th, 36 adults and 1 immature on 18th), Wiltshire (2 near Swindon on 3rd and 15th, 2 at Seagry on 25th), in Dorset (e.g., 2 at Poole Harbour on 4th, 12+ near Weymouth on 20th), and in Sussex (e.g., 3 at Shoreham on 5th, 7 on 21st). In London numbers showed no increase over the mid-winter totals, but there were immigrants in Gloucestershire (2 at Stonehouse on 3rd), a steady increase in Pembrokeshire, 3 near Aberystwyth on 4th, 3 flying N.N.E. at Holyhead on 25th. At Nottingham only ones or twos were recorded except for 6 on 18th and 9 on 25th. Near Northwich, Cheshire, a few new birds were seen through the month, 4+ on 2nd, 6 on 25th, etc., and numbers increased in Lancashire: at Blackpool 20 on 9th, 50 on 11th; near Colne 27+ on 5th, 46+ on 28th; near Burnley 7 flying N.E. on 29th; at Morecambe 177 on 17th, 203 on 30th. The first arrivals noted in Yorkshire were at Eccup, near Leeds: 7 on 18th, 15 on 24th; 5 at Malham Tarn on 27th. One at Newcastle on 18th. On Kent Estuary, Westmorland, numbers rose from 90 on 4th to a spring maximum of 120 on 24th; and there was considerable movement in the Eden Valley, north Westmorland: 11 on 26th, 6 flying W.N.W. on 29th. The first arrivals reported from Scotland were 9 on the Forth on 28th, several in Clyde area on 29th. In Ireland 2 near Dundalk on 4th, 5 adults and one immature flying N. off Bray Head, C. Wicklow, on 12th, one at Glandore, Co. Cork on 17th.

April.

Migration continued on a larger scale. 30+ at Axmouth, Devon, on 18th was an exceptional total for the district. At Weston-super-Mare the spring maximum of 25 was recorded on 3rd, and at Bristol numbers increased from 75 on 1st to 118 adults and 7 immatures on 15th. A few occurred in Wiltshire through the month, with an exceptional record of 23 flying west over Chisenbury Down on 11th. In Dorset coastal maxima were 8 near Weymouth on 1st, and 27 adults flying west into Poole Harbour on 10th; a few inland, e.g., 5 near Cranborne on 11th. In the Isle of Wight 20 were seen south of Freshwater Downs on 11th; in Hampshire 4 near Beaulieu on 13th; in Sussex a few records of ones and twos at Shoreham and towards Dungeness. At Abberton, Essex, 5 were seen on 1st and 16th. In the London area the maximum count was 11 at Harmondsworth on 27th; in Oxfordshire 6 adults were seen flying west high over Kidlington on 10th. Passage was observed along the Suffolk coast from the 5th with a maximum of 30 at Havergate on 15th; singles at Cambridge on 4 days and 2 at Peterborough on 7th. About 14 adults and 8 immatures near Gloucester on 29th; 70-100 near Cardiff on 21st. In Worcestershire 32 were seen flying north over Woodcote on the 11th, and from one to 5 were recorded from several places in Warwickshire and Staffordshire. Some movement was noted in the Trent Valley near Nottingham, with a maximum of 10 on 21st. Near Northwich up to 8 were seen almost daily, and one to 3 on a few days on Wirral coast. In Lancashire numbers again increased: at Blackpool 100+ on 18th and 24th; near Colne *c.* 200 on 15th; at Morecambe *c.* 350 on 18th; movement near Burnley on many days; a number followed the steamer from Lancashire to the Isle of Man on 17th. Many appeared on tarns and reservoirs in Yorkshire, with maxima at Eccup of 120+ on 20th, and *c.* 400 on 27th, and at Malham of 37 on 23rd. A few were seen in the Tyne area and small numbers moving north through the Lake District. There was a rapid rise of numbers in the Forth and Clyde areas, but the first birds were not recorded at Ardrishaig, Loch Fyne, till 25th.

May.

This month is notable for the first appearance of immatures, including many year-old birds, in considerable numbers, in addition to continued movement of adults. At Bristol 27 immatures with 71 adults on 13th; in Wiltshire 2 near Swindon on 5th and two singles; in Dorset 6 near Weymouth on 4th, otherwise only two records of 2 and one single; none reported from Hampshire or Sussex. In Middlesex 9 adults on 10th, 2 adults and 6 immatures on 16th at Staines, 2 adults and 11 immatures at Perry Oak on 30th. A few were seen on the Suffolk coast through the month; in Norfolk *c.* 27 at Breydon and some off Yarmouth from 28th; 40 at Blakeney on 6th, reduced to 3 by 15th. 7 sub-adults flew N.N.E. over Cambridge on 13th, 3 adults and 5 immatures at Peterborough on 20th, and occasional smaller numbers. A few were seen in Worcestershire, Warwickshire and Staffordshire in first half of month, e.g., 9 at Bellfields in the period 1st to 7th. At Nottingham 9 immatures on 13th, 2 adults and 10 immatures on 20th. Near Northwich 2 adults and 6-8 second-summers on 8th; a notable influx of 114, of which only 10 appeared to be fully adult, on 22nd. At Blackpool numbers varied from 35 to 150+; near Colne 150 adults and 20+ immatures on 26th; 12+ moving west through Calder Valley on 28th. At Eccup 59 adults and 5 immatures on 4th; 36 adults and 26 immatures on 10th; 70 adults on 22nd; at Malham 13+ on 31st. On Kent Estuary an influx of 54, all apparently adult, on 7th. At Loch Sween, Argyllshire, 5 on 1st were first of the year.

June.

There were few indications of significant movement in the first half of the month, but a definite increase in a few places in the last fortnight showed that southward migration had begun. At Bristol 34 adults and 46 immatures were seen on 10th, and 20 immatures were seen near the city for some days. In

Wiltshire 4 singles through the month; 2 near Weymouth on three days; none reported from Hampshire or Sussex. At Romford, Essex, 6 probable immatures on 14th; in west Middlesex 4 adults and 21 immatures on 17th, 30 adults and 16 immatures on 20th. Some were seen off Yarmouth in the first week, 3 adults and 4 immatures at Cambridge on 1st. In Worcestershire 5 immatures were seen flying N.E. at a great height over Clent hills on 4th; one over Alvecote, Warwickshire on 28th. 44 near Cardiff on 18th may have been long-range foragers or non-breeders. Near Nottingham 4 adults and 2 immatures on 28th; near Colne 10-15 adults and 20-25 immatures on 29th; small-scale movements near Burnley. On the Kent Estuary 11 on 22nd, *c.* 50, including some immatures, on 25th and 26th.

July.

There was some movement through the month, most noticeable in north and east England. None recorded Wiltshire or Dorset; 2 at Shoreham on 23rd; 10 at Harold Wood, Essex, on 15th; 60 flying east over London airport on 29th. The appearance of over 150 on Scroby Sands, Yarmouth, on 9th, feeding on terns' eggs, is remarkable. At Southwold the first autumn bird was seen on 9th; 2 at Cambridge on 30th. Numbers increased at Nottingham, *e.g.*, 20 adults and 25 immatures on 26th. There was a heavy inland passage through Cheshire: from 20 to over 70 near Northwich through the month; numbers increased at Blackpool and on Kent Estuary. At Galway City, where none was seen in spring, 7-9 were present on 26th.

August.

During this month migration took place on a large scale in many districts. No autumn records for Wiltshire; 3 adults at Weymouth on 29th; in Hampshire 2 adults and one immature at Pennington on 27th. At Shoreham 7 on 23rd, 13 on 29th, 22 on 30th; on Pett Level the first autumn birds were 6 on 11th, at Pevensey 11+ on 18th. Numbers increased in the Thames area: 35 at Harold Wood on 15th, 60 adults and 20 immatures in west Middlesex on 16th. Considerable numbers were seen on the Suffolk coast through the month: 33 flying S.W. and 8 N.E. near Felixstowe on 25th; 95 near Harwich on 11th and others moving south; 20 at Southwold on 25th; 80-100, of which about two-thirds were immature, at Benacre Ness on 30th. 58 at Blakeney on 29th, the only record for the month. Over Alvecote Pools, Warwickshire, 20 adults and one immature flew W.S.W. on 3rd. A further increase at Nottingham: 69 adults and 42 immatures on 31st; and at Sawley, Leicestershire, the autumn maximum of 80+ was reached on 15th. Near Northwich autumn maximum of 102 on 17th. There were large counts of 333 adults and 43 immatures near Colne and 165 adults at Eccup, both on 21st; 28 at Malham on 23rd. 4 seen flying S.E. over Grasmere, singly, on 18th; 3 in Eden Valley on 25th.

September.

In most areas southward movement reached its peak during this month. Maximum autumn counts were made at Weston-super-Mare, 24 adults on 3rd; near Weymouth, 6 on 7th and 11th; at Hurst Castle, Hampshire, 10 on 1st. Large numbers frequented the London area, *e.g.*, 70 in west Middlesex on 19th, and some spread up the Thames valley, *e.g.*, 30 at Slough on 12th. A few single birds seen over Cambridgeshire during the month and *c.* 100 at Benacre, Suffolk, on 4th, but no information from other parts of Anglia. Numbers near the Pembrokeshire colonies dwindled at the end of the month. Along North Wales coast groups of up to 7 were seen at several points from 2nd to 19th. At Nottingham numbers were still increasing: 238 adults and 49 immatures on 29th; but fewer were seen near Northwich, maximum 30 on 28th. There was a further increase at Blackpool with an autumn maximum of 300-400 on 21st, and near Colne 311 adults and 95 immatures on 19th. At Morecambe 260 on 26th, and 50 at Grange-over-Sands on 28th. 60 were roosting on

Malham Tarn on 25th; 8 flying N.W. high over the Eden Valley on 2nd. The last birds were seen on Loch Sween on the 3rd. In Ireland 7 at Galway City on 24th; 5 at Great Saltee, Co. Wexford, on 27th.

October.

Large scale movement continued through the month, and in some favoured resting places maximum autumn numbers were recorded.

5 near Weymouth on 9th; 6 flew west over Solent and 6 more failed to top downs in Isle of Wight in strong wind on 1st. Near Dungeness separate parties of 240 (*c.* 90% immature) and over 220 were seen on 8th. At Romford a count of 20 on 17th was the autumn maximum. On 7th P. A. D. Hollom recorded about 850 coming in to roost at Littleton Reservoir, Middlesex, but he considers this an average autumn gathering rather than a late influx. At Southwold there were 16 on 11th (autumn maximum *c.* 50 on November 1st). 2 flying over Peterborough on 6th; 3 going S.W. over Stilton, Huntingdonshire, on 24th. At Gloucester a count of 6 on 4th was the autumn maximum. The last seen at Haverfordwest, Pembrokeshire, were 4 adults on 3rd. At Nottingham the autumn maximum was reached in the first week with *c.* 450 on the sewage farm; there was some decrease towards the end of the month but still large numbers. Near Northwich there were *c.* 60 on 16th and smaller parties through the month; at New Ferry, Wirral, 6 adults on 26th. At Blackpool there was a decline through the month: 50— on 4th, 25 on 14th, 16 on 25th; near Colne 214+ and at Burnley 23, both on 28th; at Morecambe 173 on 31st and 40-50 through the month at Grange-over-Sands. There were 330+, including immatures, at Eccup on 12th, an autumn maximum of 90 at Malham on 15th, and a total of 251 on six Yorkshire reservoirs on 22nd. At Alnmouth, Northumberland, about 6 on 18th. The last seen at Ardrishaig were 4 on 3rd; 2 at Dumfries on 29th. On Great Saltee 2 were seen on 2nd and singles on 3rd and 9th, all flying westward.

COMPARISON WITH PREVIOUS YEARS.

Several contributors sent useful summaries of observations in earlier years. On the whole these give the impression that the 1950 pattern of migration was typical of the last decade. In Dorset, for instance, the small parties in spring, with a peak in early April, and the scarcity in autumn are regular.

The first arrival of immigrants is often difficult to detect, as small numbers seen in February may only be winter residents, but a small-scale arrival in south-west England and Wales in the second half of February is noticeable most years. Further north there are some curious anomalies. Near Northwich A. W. Boyd has usually recorded the first spring migrants in or about the third week in March, but on the Kent Estuary, Westmorland, there has been an influx of from 20 to over 100 birds in the first week of March in five of the years 1945-1952, the exceptions being 1947 (March 17th), 1950 (February 27th) and 1951 (February 13th). In the Dungeness area small numbers have usually been reported between mid-March and the end of April, but there, as elsewhere in south-east England the spring movement is on a much smaller scale than the autumn. At Ayr first arrivals for five years varied from February 23rd (1943) to March 25th (1944), but the second or third week in March seems normal (G. Hughes-Onslow). In Argyll, however, the first birds are regularly seen in late April or

even early May (A. H. Gray). In Co. Mayo, Ireland, spring migrants are first seen from the third week in February (rarely) to the first week in March (R. F. Ruttledge).

The long duration of the southward migration is confirmed by notes on previous years. The very early movement through Cheshire is shown by counts of 80+ on June 28th, 1946, and 500+ on July 17th, 1949 (A. W. Boyd). In the Trent Valley the early arrivals in June and striking increase through the following three months are now regular, and the gulls seem to be spreading over a wider area. In Leicestershire small numbers, occasionally 8 or 10, are regularly seen from early or mid-March to mid-October, but only in recent years have flocks of up to 50 been found in autumn at Sawley, at the junction of the rivers Soar and Trent (H. Hunt). At Northampton Sewage Farm in 1949 Lesser Black-backed Gulls were only seen singly or in twos in March, April, July and August. Near Hereford one or two are seen almost daily through the summer months on or near the rivers Wye and Lugg (C. W. Walker); and in Worcestershire "at least 25 to 50 birds spend the summer months on the rivers Avon and Severn" (A. J. Harthan).

The build-up of very large numbers in the London area in autumn is also typical of recent years, but has developed in a very remarkable way in the present century. W. E. Glegg (*Ibis*, vol. 85, p. 92) states that "in earlier days, about 1866, it was described as a rare bird, but since that time it has steadily increased and has been an annual autumn passage-migrant in some numbers since 1927." P. A. D. Hollom counted about 2000 at Littleton Reservoir in August and September, 1939.

Major Ruttledge remarks that the large Irish breeding population regularly disappears very rapidly, and although J. F. Simms reports that flocks of over 40 are frequently seen in October on the estuaries of Co. Wexford these may not be birds of Irish origin.

There are two reports of an apparent decrease in the volume of migration. C. Oakes (per K. G. Spencer) finds the spring migration through the Pennine valleys near Burnley and Colne reduced, though it is still considerable. There is some evidence, however, of a corresponding increase through the Aire Gap with the growth of the large colony in the Northern Pennines. More striking is the apparent cessation of former large autumn movements on the Yorkshire coast. Few are now seen at Spurn Head (R. Chislett), and no movement seen off Flamborough Head (A. J. Wallis); but the latter observer says his father watched large flocks of Lesser Black-backed Gulls passing southwards ten or fifteen years ago, and T. A. Coward (*Birds of the British Isles*, 1920, Series II, p. 216) records seeing "huge passages" on the Yorkshire coast early in October.

THE BRITISH AND SCANDINAVIAN RACES.

Small numbers of dark-mantled Lesser Black-backed Gulls were reported from a few widely separated localities in March and April, but the scattered occurrences do not in themselves suggest any considerable movement of birds of the Scandinavian form through the British Isles in spring. In autumn, on the other hand, there is evidence of large-scale migration on the east and south east coasts of England of these dark Lesser Black-backed Gulls, many of which are typical of the Scandinavian race. Numbers of dark birds and intermediates are an annual occurrence in autumn on the east side of Dungeness (M. L. R. Romer), for example, and small numbers are seen in the London area. On the Suffolk coast the great majority of a group of 80-100 Lesser Black-backed Gulls at Benacre Ness from August 18th to September 4th, 1950, were dark birds and many were typical of *L.f. fuscus*. When B. W. Tucker watched a similar flock with me at the same place on September 1st, 1949, he was of the opinion that, in spite of some variation in shade of the mantles of adults, none was of British origin. A flock of about 100 at Benacre in 1951 consisted almost entirely of dark birds. There seems little doubt that there is a regular immigration across the North Sea in August and September, and the number of Scandinavian Lesser Black-backed Gulls passing through the British Isles is certainly underestimated in *The Handbook*. The sum of our knowledge is, however, far too small at the moment for any definite conclusions to be drawn.

MIGRATION DATES AND NON-BREEDING BIRDS.

The most striking feature of the migration of the Lesser Black-backed Gull is its very protracted nature. In a normal year immigration into the British Isles begins about the middle of February, and northward movement continues till the end of May. Southward migration is evident before the end of June and continues till the end of November, or even into December.

The rate of northward spread in spring and the date of departure of late emigrants in autumn appears to be affected by weather conditions in the British Isles. For example the first migrants in south Westmorland were a fortnight later than usual in the exceptionally cold spring of 1947, and there were remarkable numbers of lingering birds in the mild early winter of 1951: e.g., 50 at Hereford on November 25th; 131+ near Colne on December 31st; 268 on November 19th and 150 on December 6th at Morecambe; and other December birds were reported for the first time at places in Essex, Norfolk, Yorkshire and Ayrshire. The winter enquiry showed that larger numbers were present in November, 1949, than in 1950. In 1949 both October and November had mean temperatures well above average, whereas in

1950 there was a cold spell at the end of October and the November mean temperature was below average throughout the British Isles. At Morecambe, where the gulls are practically independent of natural foods, the direct influence of temperature rather than its effect on food supply would seem to be the decisive factor. But although a drop in temperature may provide the final stimulus to migration in these lingering birds it can hardly be concerned in the departure of the early emigrants in July and August.

A considerable proportion of the late immigrants in May are immature non-breeding birds, which are also among the first to move south in late June or July. The large scale of this summer immigration of immatures is shown by a count of 500 Lesser Black-backed Gulls, of which 90% were immature, at Redmire Dam in the Pennines on June 6th, 1948, during a plague of the larvae of the Antler Moth (*Charceus graminis*) (K. G. Spencer). Apart from these immatures a number of gulls have been reported in mid-summer in fully mature plumage far from any breeding colony, for example in East Anglia and the West Midlands. As the foraging range of breeding birds is not known it is more difficult to detect non-breeding adults in the north and west, but there appeared to be some at Bristol, Cardiff, Glasgow, on Morecambe Bay and elsewhere. Three or four individuals, fully mature in plumage and colour of soft parts, have been watched through recent summers on the Kent Estuary, Westmorland. In a paper on "Non-breeding among arctic birds" (*Ibis*, vol. 94, pp. 310-333) A. J. Marshall describes the presence of numbers of adult non-breeding birds, including Glaucous Gulls (*Larus hyperboreus*) and Kittiwakes (*Rissa tridactyla*) on Jan Mayen Island. Dissection of non-breeding adults showed that "there is nothing physiologically abnormal about the male non-breeder of several species, including . . . gulls". Marshall states that there is a shortage of nest sites on Jan Mayen safe from the predation of the Arctic Fox, and suggests that the lack of security may inhibit breeding. It seems possible that a similar situation may arise with gulls in Britain owing to human interference. Two large Lesser Black-backed gulleries in north-west England have become practically extinct in recent years apparently because of continual egg-collecting and occasional heath fires. Large numbers of adult gulls collect on adjacent estuaries in spring, and though the majority probably join other gulleries some non-breeders linger through the summer and others may disperse without nesting. Non-breeding adult Herring Gulls appear to be much less common, and this might be associated with the greater security of their normal nest-sites on cliffs.

MIGRATION ROUTES THROUGH THE BRITISH ISLES.

In a paper on "Homing ability in gulls" (*Ibis*, vol. 94, pp. 243-264) G. V. T. Matthews gives an analysis of the ringing recoveries

of Lesser Black-backed Gulls from the colonies of north-west England. He concludes that "the bulk of migration is along the west coast, with few recoveries any distance inland," but "twenty-six recoveries were within twenty-five miles of the east coast, or in intermediate positions (mostly in the Pennines) which indicated that they had been crossing from one coast to another." Significant recoveries showed 41% of the birds using the east coast route, with a higher proportion of older birds than juveniles doing so. "It is probable that while the bulk of the birds go south by the west-coast route and many return by it, a considerable proportion continue along the north coast of France on their return, crossing the Channel at its eastern end, proceed up the east coast of England and cross to the west coast over the Yorkshire dales." Matthews remarks that the bulk of recoveries are of immature birds, but "comparison of immature and adult recoveries revealed no outstanding differences, except that the young birds tend to remain scattered along the migration path."

The observational data of this Enquiry suggest a few modifications of these conclusions, particularly with regard to the use of inland routes. They show that there is some movement over a very wide front, but also a heavy concentration of numbers in certain localities and a difference between the routes followed in spring and autumn. In spring migrant adults are seen regularly in Dorset, Oxfordshire and the West Midlands, but occurrences in these counties are few and irregular in autumn. On the other hand much larger numbers are seen on the east and south-east coasts in autumn than in spring, and the difference is even more marked in the London area and the Thames estuary. In the Trent valley, too, numbers are much larger in autumn. It is true that the gulls stay much longer in favoured places on the southward passage, and flocks are swollen by juveniles of the year, but when full allowance is made for these factors it is clear that the autumn passage is heavier in eastern England and the spring passage in the west.

It is evident both from the ringing recoveries and from the observations summarised in the monthly survey (pp. 239-242) that much migration closely follows the coastlines, but inland movements seem to be proportionately greater than the recoveries would suggest. Possibly mortality risks are higher on the coast (oiling, for example), or rings more easily found on the tideline. There is a very considerable movement over the Pennines in both spring and autumn, but this does not appear to be direct from coast to coast. Large numbers are seen in the Trent valley and on the Cheshire fens, but few at any season either at Spurn Head or on Wirral coasts, and few appear to follow the most direct route from the Humber, up the Yorkshire Calder valley (J. C. S. Ellis). On the other hand K. G. Spencer has observed

regular movement north and south through the Rawtenstall-Burnley valley parallel to the main ridge of the Pennines.

The routes followed south of Nottingham and Cheshire are much more obscure. From Nottingham the bulk of the early autumn migrants move south-east or east, but in late August, September and October this is replaced by a strong south-westerly movement (R. J. H. Raines, *antea*, vol. xliii, p. 103). It is a reasonable assumption that the latter gulls cross to the Severn estuary, where numbers are seen at all seasons, but there is little direct evidence of passage over the gap between Nottingham and Gloucester. The small numbers seen near Cambridge and Peterborough in spring and autumn might be travelling between the Thames estuary and either the Wash or the Trent valley. From Cheshire again one would expect a direct route to the Severn estuary, but only occasional small numbers are reported from the West Midlands in autumn. There may be some movement along the North Wales coast, but very few birds follow the curve of Cardigan Bay through Aberystwyth. The considerable passage along the east coast of Ireland probably includes many Scottish and some English birds.

Surprisingly few are seen on the south coast of England between Devonshire and Beachy Head, and it seems probable that many travel along the French coast on both passages, and some perhaps in mid-Channel (*cf.* Matthews, *loc. cit.*). R. H. Poulding recorded 5 or 6 Scandinavians at Le Touquet on October 7th and 8th, 1949, and one adult and two juveniles following a Channel steamer for some miles. In spring some immigrants proceed inland as soon as they strike the Peninsula coast. On March 10th, 1935, H. G. Hurrell watched ten fly in from the sea near Plymouth Harbour and continue inland in a north-easterly direction. The inland occurrences in Dorset and Wiltshire confirm this tendency.

Even when Lesser Black-backed Gulls occur annually in the same inland district there is often much variation in the direction of their flight. In recent years Bruce Campbell has observed several spring migrants in Oxfordshire moving in a generally westerly direction, but previous records from the outskirts of Oxford have been of easterly migration. K. G. Spencer also finds movements in some of the Pennine valleys extremely complex and the seasonal trend often difficult to detect. One can hardly avoid the conclusion that much of the inland migration of individual Lesser Black-backed Gulls is of an indirect and meandering nature, at least when they are flying at low levels.

MANNER OF MIGRATION.

Although the bulk of records sent in were of resting birds there were a number of reports of apparently migratory flight in progress. In the majority of cases in which wind direction was stated

the migrants were flying against it. This might be partly due to easier identification of gulls making slow progress past the observer, or to a tendency for the birds to fly low in such conditions. There were also records of birds flying with the wind or across it. Movement was reported at times ranging from early morning until sunset; in fair, anticyclonic conditions and under overcast skies, and once in heavy rain. No satisfactory generalisations can be made from the available data on weather conditions and their effect on migration.

A constant feature of nearly all reports is the apparent preference of Lesser Black-backed Gulls for travelling singly or in small parties. A group of ten or more is unusual, though H. Hunt recorded a flock of fifty flying east at Blakeney on October 19th, 1951. K. G. Spencer's numerous records of spring and autumn movement in the Pennine valleys are practically all of ones and twos, and the southward movement down the Suffolk coast in August and September is similar (J. A. G. Barnes, A. E. Vine). On the Kent estuary the arrival and departure of spring migrants at a resting-place has been watched. For example, on March 6th, 1945, 24 flew in from the south between 1530 and 1630 hours in groups of 7, 5, 2, 1, 1, 4, 4 (a "group" being a very loose association in which the birds would be within easy sight of each other). At 1430 hours on May 1st, 1952, about 150 newly arrived Lesser Black-backed Gulls, mostly adult, were feeding in shallow water on the estuary. From about 1515 hours they began to move off and 12 flew S.E. into the wind in the first half-hour, rising to c. 200 feet; others followed, sometimes 5 or 6 in quick succession, sometimes singly, but never with any appearance of flock-movement. At 1630 hours only 28 were left.

A regular feature, particularly of the autumn movement, is the assembly of the migrants in a few favoured resting-places which are used year after year while other apparently suitable sites are passed over. Flooded gravel pits are a favourite choice both inland and near the coast, the water being used for bathing and the gravel spits for preening. At some of these assembly points, for instance Benacre gravel pits on the Suffolk coast and Witton Flashes at Northwich, there appears to be a constantly changing population with an irregular trickle of arrivals and departures, but in London and Nottingham areas the rise in numbers through the autumn suggests that many individuals stay two or three months or more, probably because of the better scavenging facilities near large towns.

Much coastal migration follows the shore line very closely, the birds flying steadily at a height of 20 to 100 feet over the sea or beach. There is some evidence of gulls following the course of rivers in the same way at moderate heights, up to about 200 feet. For example 9 adults were recorded following the Tame valley,

Warwickshire, April 13th to 15th, 1951, "appearing to re-fix their course at Two Gates and fly north along the river" (G. A. and M. A. Arnold). Passes are also used as routes through hill ranges, the Aire Gap through the Pennines and Dunmail Raise through the Cumbrians.

On the other hand there are some indications of cross-country migration at heights beyond normal naked eye vision without the use of rivers or other natural features. On June 4th, 1950, C. A. Norris, from a thousand-foot hill-top at Clent, Worcestershire, picked up with glasses 5 immature gulls flying N.E. out of range of the naked eye, perhaps 2000 feet above him. J. C. S. Ellis saw a Lesser Black-backed Gull flying 100 feet over the summit of Moel Siabod, North Wales, on June 5th, 1950, and Canon G. A. K. Hervey has recorded 3 immatures over Bowfell on August 31st, 1945, and one adult over Schiehallion on April 29th, 1950. On April 21st, 1952, while watching a pair of Buzzards (*Buteo buteo*) over Helm Crag, Westmorland (1300 feet) I found with glasses two Lesser Black-backed Gulls far above them, circling and drifting slowly northwards, though the Dunmail gap, 750 feet, was close at hand. High-flying migrants were recorded over the Glyme valley, Oxfordshire, on April 10th, 1950, by Bruce Campbell, who also saw large, unidentifiable gulls flying over Oxfordshire in the summer of 1949.

It is impossible at present to gauge the volume of this high-level migration, but it might account, at least in part, for the apparent gaps mentioned above in observations of cross-country movements.

VARIATIONS IN PLUMAGE AND COLOUR OF SOFT PARTS.

This subject must be treated with great caution in a Field Enquiry, as it must remain primarily the province of the museum worker; but the field observer has one advantage over the man who handles a skin or live bird . . . the quantity of material available to him. Lesser Black-backed Gulls vary a great deal in tameness, but at some breeding colonies and resting places they will allow approach to within twenty yards, sometimes much less. At this range, when due care is taken with conditions of light, field observations of colour can have some value.

A few freak adult birds were recorded with large white patches on each wing, and probably such abnormalities are not really uncommon, but an extreme case was noted at Newcastle-on-Tyne, on April 4th, 1950, with the whole back and wings piebald, without any regular pattern (H. Tully).

The problem of the shade of the mantle is more difficult, but regular breeding on the Scilly Isles of a number of Lesser Black-backs definitely darker than the normal British type has been established by R. H. Blair and A. G. Parsons. On July

6th, 1951, I found a similar specimen apparently breeding on Walney Island, Lancashire. Having studied it at various angles in a good light at about twenty yards I found it slightly less black than a Great Black-backed Gull (*Larus marinus*), but markedly darker than normal *L.f. graellsii*. Close study would probably produce similar individuals in other colonies.

Exceptionally light-coloured specimens also occur. R. G. Wagstaffe of the Liverpool Museum has a remarkably pale-mantled skin obtained in the Shetlands, and in 1950 the following similar specimens were recorded in the field under favourable conditions: one at Billingsgate on March 14th, also remarkable for having dark brown legs (P. A. D. Hollom); one at Lancaster, conspicuously pale among many normal birds, on August 17th (J. A. G. Barnes); and one near Colne, intermediate in shade between typical *L.f. graellsii* and *L.a. argentatus*, on October 7th (K. G. Spencer). The possibility of hybridism with Herring Gulls cannot be entirely ignored in these cases, but it is much more likely that both light and dark forms are mutants. Their existence increases the difficulty of subspecific identification in the field.

In the report on the winter enquiry the occurrence of adult Lesser Black-backed Gulls with flesh-coloured or whitish legs was discussed and reasons given for considering this a seasonal recession of colour. During the period of the summer extension a few adults with flesh-coloured legs were observed: 5 in March, 4 in April, 3 in June, 2 in August, a few in September, and over 20 in October. These figures strongly support the theory of seasonal recession of colour, as so few pink-legged specimens were recorded in summer out of the much larger numbers available for observation. There is, however, great variation among breeding birds in the shade of yellow of the legs, which range from pale straw colour to rich ochre. There is no apparent connection between the colour of legs and bill: a one-legged adult in Westmorland on May 1st, 1952, had a deep orange-yellow beak and a pink leg and foot.

There are also individual variations in size, not as striking as in the Great Black-backed Gull, but quite noticeable in the field. For example, G. A. Bowden saw an adult at Blackpool on July 16th, 1950, with a wing-span about six inches greater than the normal.

ADDENDA TO THE WINTER ENQUIRY.

A few additional notes have come in since the winter report was submitted for publication (*antea*, vol. xlv, pp. 2-17), and the following records were not included in the Regional Survey of the two winters of the Enquiry:

A series of counts on the Thames near Barnes Bridge by Mr. T. H. L. Mills gave considerably larger totals than any previously received from the London area: 1949-50: 30 on November 6th, 28 on 20th; 25 on December

5th; 15 on January 3rd; 35 on February 16th. 1950-51: 26 on November 2nd; 22 on December 9th; 24 on January 6th; 30 on February 10th.

A few were seen near Hereford, the only records for the county, on November 30th, 1949, and on several days in January, 1950 (C. W. Walker).

The map of mid-winter distribution should now show Herefordshire with horizontal shading, but, if the Thames birds are included in Middlesex, would not otherwise be affected. The proportion of birds wintering away from the breeding colonies in 1949-50 is shown to be rather higher than is indicated in the comments on distribution (*ibid.*, pp. 7-8) and should be amended to about 125 compared with 185 near the Pennine gullery.

SUMMARY OF CONCLUSIONS FROM BOTH PARTS OF THE ENQUIRY.

1. Immigration into the British Isles usually begins in mid-February and continues till the end of May, with a large proportion of immatures among the later arrivals.
2. Numbers of non-breeding adults spend the summer in various parts of the country.
3. Southward movement begins before the end of June and continues into November. Mild weather delays the late emigrants.
4. Migration takes place over a wide front, with visible concentration in a few places, coastal and inland, but precise routes cannot be mapped with any certainty. The west side of England has the heavier passage in spring, the east side in autumn.
5. Some migrants follow the line of coast or river at moderate heights in varied weather conditions, usually flying singly or in very small parties, but large numbers assemble at favoured resting-places, especially in autumn.
6. Some migration takes place at a height of 3000 feet or more, and there is a possibility of heavy passage beyond the range of naked-eye vision from the ground.
7. Many dark-mantled birds, presumably mostly of Scandinavian origin, appear in autumn between the Humber and the Channel, and single birds or small numbers in many districts in both spring and autumn.
8. A small, but probably increasing, number of Lesser Black-backed Gulls regularly winters in the British Isles, the great majority of them adults of the British race.
9. About 60% of the residents remain within 45 miles of a large colony in the Pennines; others occur every winter in London and Bristol. Very few or none remain near gulleries in Scotland, Ireland, Wales and the Scillies.
10. The bulk of the winter-residents feed in or near towns, usually with Herring Gulls.

11. Evidence is given of a seasonal recession¹ in the colour of legs, feet and bill, many adults having whitish or flesh-coloured legs and feet in winter.
12. Examples are given of individual variation in size and shade of mantle.

LIST OF CONTRIBUTORS TO THE SUMMER EXTENSION.

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STUDIES OF SOME SPECIES RARELY
PHOTOGRAPHED.

L. LITTLE EGRET.

Photographed by WALTER E. HIGHAM, G. K. YEATES AND
JOHN REYNOLDS.

(Plates 36-41)

LITTLE EGRETS (*Egretta garzetta*) had been recorded in the British Isles only on some twelve occasions before 1952 when, however (see pp. 255-258), the species was observed in four counties—Cornwall (March 2nd-17th), Norfolk (May 7th-11th), Carmarthen (June 7th) and Sussex (June 10th-September 1st). It is possible, as there was no overlap in dates, that only one individual was involved, but if that was the case its wanderings were somewhat erratic, and it is perhaps more likely that the Cornish bird moved to Wales (where it might well remain unobserved for a considerable period) and that the Norfolk and Sussex records refer to another. It is of interest to add that in 1953 Little Egrets have again appeared on the Camel Estuary in Cornwall and at Cley in Norfolk, as well as on the River Otter in Devon, in which county there had been two records in 1951 (April and June-August) (*vide*,



LITTLE EGRET (*Egretta garzetta*).

ADULT IN THE TREE-TOPS. CAMARGUE, SOUTH FRANCE.

(Photographed by G. K. YEATES).

The ends of the long, drooping scapular-plumes show to the right of the bird's primaries in this photograph.

(See page 252)



LITTLE EGRET (*Egretta garzetta*).
AT NEST CONTAINING YOUNG. CAMARGUE, SOUTH FRANCE
(Photographed by WALTER E. HIGHAM).
This is the same nest as that shown on plate 38.



LITTLE EGRET (*Egretta garzetta*).

ADULT AT NEST WITH YOUNG. CAMARGUE, SOUTH FRANCE.

(Photographed by WALTER E. HIGHAM).

The two 6-inch long crest-feathers are well shown here.



LITTLE EGRET (*Egretta garzetta*).
ADULT AT NEST WITH CLUTCH OF FIVE EGGS.
CAMARGUE, SOUTH FRANCE.

(Photographed by G. K. YEATES).

As is the case with some of the other small, tree-nesting herons, the nest of this species is often small and rather flimsy.

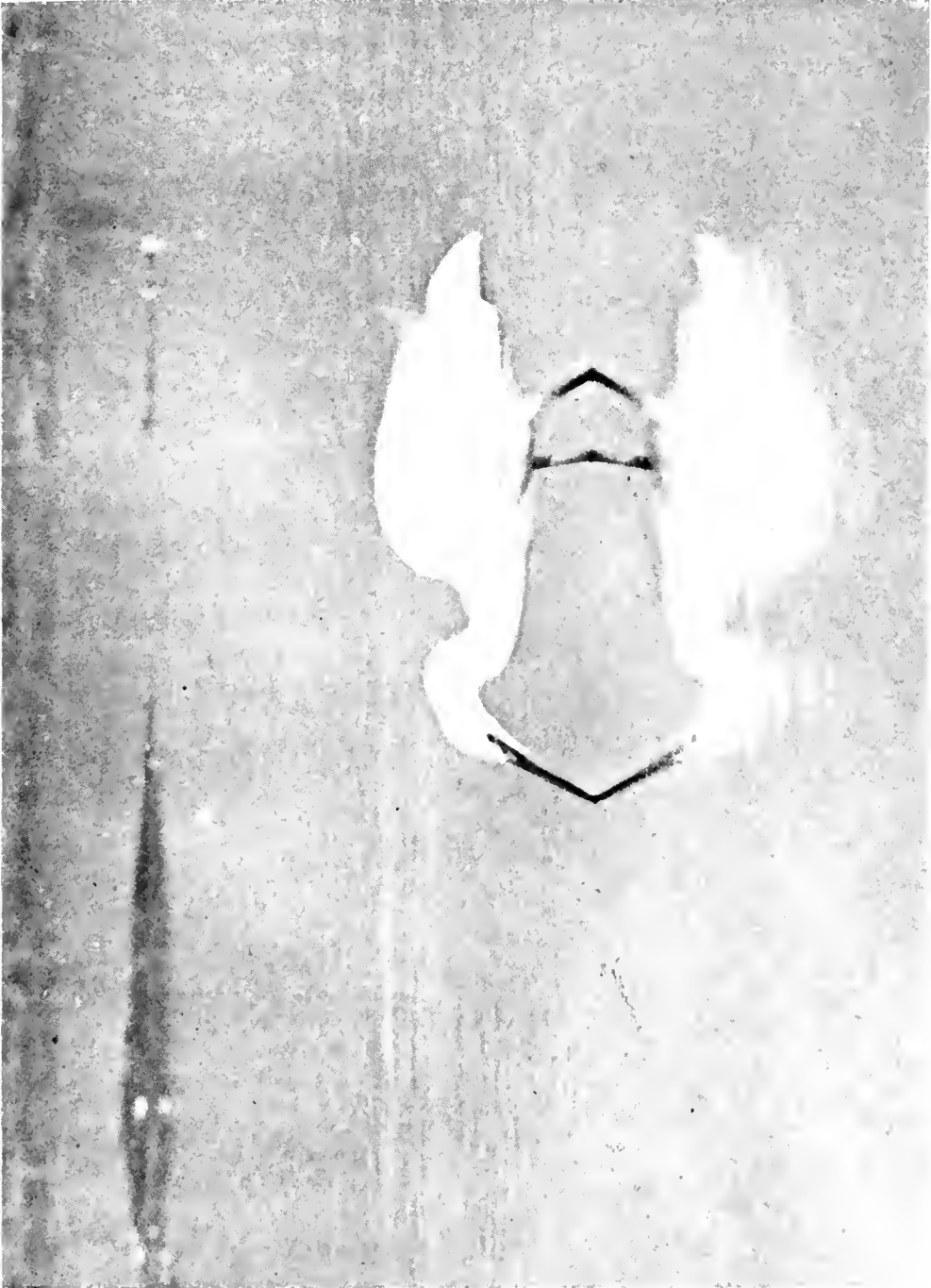


LITTLE EGRET (*Egretta garzetta*).

ADULT AT NEST WITH EGGS. CAMARGUE, SOUTH FRANCE.

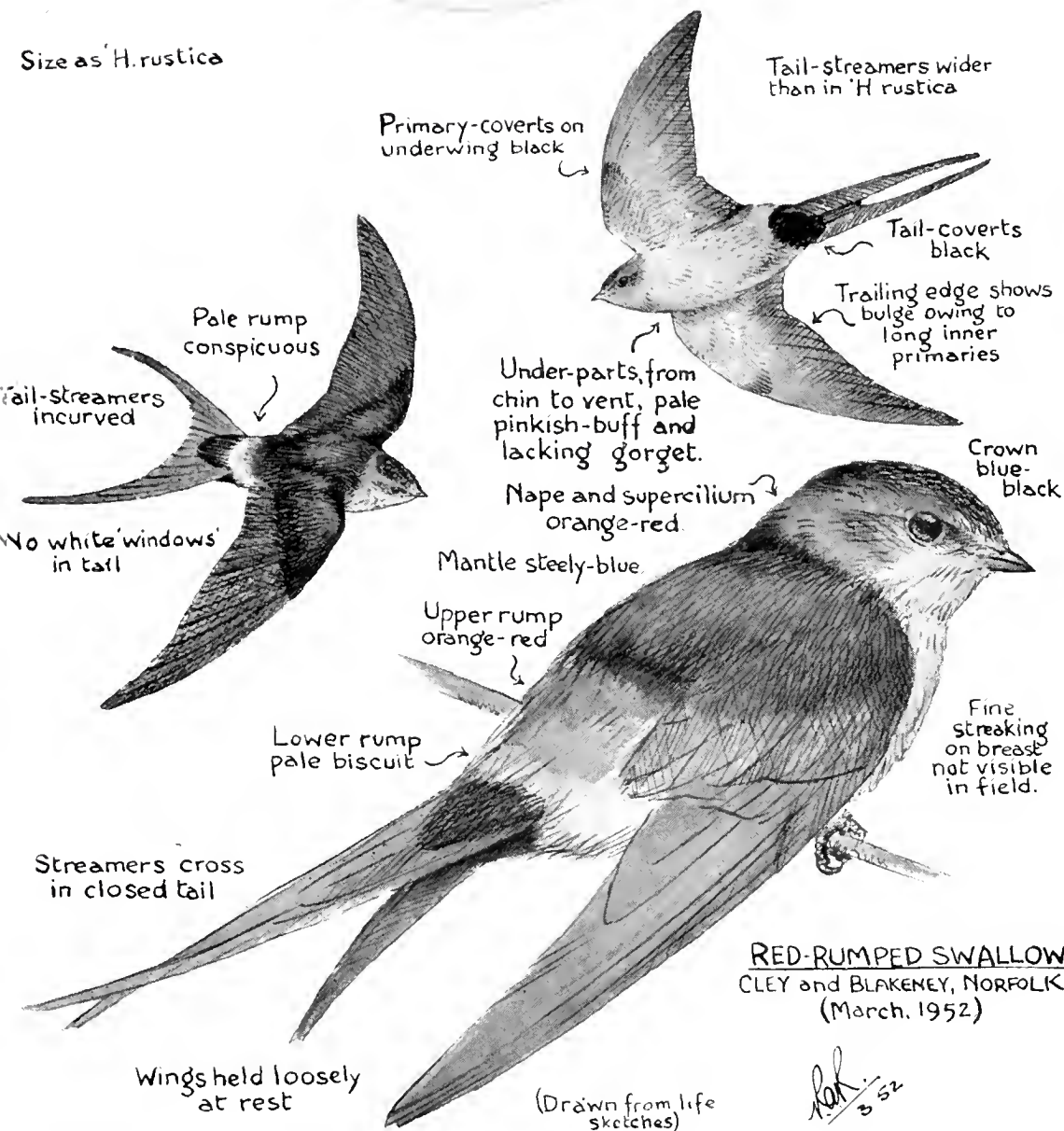
(Photographed by G. K. YEATES).

This is the same nest as that which appears on plate 30.



LITTLE EGRET (*Egretta garzetta*).
ABOLT WADING. NEAR CHICHESTER, SUSSEX, AUGUST, 1952.
(Photographed by JOHN REYNOLDS).
(see pages 252 and 257)

Size as 'H. rustica



RED-RUMPED SWALLOW
CLEY and BLAKENEY, NORFOLK
(March, 1952)

(Drawn from life sketches)

RED-RUMPED SWALLOW (*Hirundo daurica*).
CLEY and BLAKENEY, NORFOLK, MARCH, 1952.
(Drawn from life sketches by R. A. RICHARDSON).
(see page 263)



ADULT STARLING (*Sturnus vulgaris*) WITH ABNORMAL BILL.
CROSBY, LANCASHIRE, JANUARY 5TH, 1953.
(Photographed by THE CROSBY HERALD).
(see page 254)

24th Report Devon Bird-Watching and Preserv. Soc., pp. 28-29), and at Minsmere in Suffolk (full details will be published). Although *The Handbook* lays some emphasis upon the possibility of Little Egrets in this country being "escapes", there is nothing in these accounts to suggest such an origin, nor have we been able to trace any recent losses. The number of records during 1951-53 indicates genuine wildness and suggests that ornithologists in this country may soon hope to see this bird more frequently.

A widely distributed species, but a summer-visitor to the northern parts of its range, the Little Egret breeds across south Europe and south Asia to Japan, as well as in much of Africa and in Australasia. The European bird is readily identifiable by its white plumage, long snaky neck and black bill and legs, the last surprisingly finishing in the remarkable, sickly yellow feet which are at their brightest in the breeding-season, when they are extraordinarily conspicuous as the bird picks its feet out of the water (to a certain extent these show as a lighter colour in these plates). At the end of the year they are usually much less noticeable, often being quite greenish. John Reynolds's photograph (plate 41) of the Sussex bird gives a good general field-impression. Egrets are of course famed for their plumes, particularly the long, delicate feathers of the scapulars and mantle (plate 36)—the deplorable "ospreys" of women's hats. Plate 38 shows very well the two 6-inch crest-feathers that are not, however, always as conspicuous as one might imagine; they are worn only in the breeding-season and raised in posturing, particularly during the noisy, demonstrative nest-relief ceremony (both sexes incubate, as in many herons). That the breast-feathers are also soft and drooping can be seen in several of the plates.

The Little Egret nests in large colonies, often with other herons, particularly Cattle Egret (*Ardeola ibis*) and Night Heron (*Nycticorax nycticorax*), when it can be very difficult to identify individual nests, though the eggs of the Cattle Egret are bluer, and the buffish young of the Night Heron are quite different from the white nestlings of the other two. Nestling Little (plates 39-40) and Cattle Egrets are separable by their different bills: that of the former is longer, dark above and paler below; that of the latter is more stubby and uniformly dark except for a noticeable pale tip. The nests may be very close together and are often in trees, when they can be very flimsy; those of the Little Egret (plates 37-40) are sometimes a little deeper than those of other small herons, but they are only some 10-12 inches across at the top of the main cup, and when built entirely of thin twigs (radiating out from the centre) are sometimes sufficiently frail for it to be possible for one to see the four or five pale blue-green eggs through the structure. Like other gregarious herons, Little Egrets can be very noisy in the colony, producing a cacophony of

croaks and squawks, but out of the breeding-season they are almost silent, though where there are parties single cries may be heard: thus G. F. Mees (*antea*, vol. xliii, p. 302) records a harsh "kgááár" when an individual is agitated, "for instance when chasing away other birds that had approached too near."

I.J.F.-L.

NOTES.

Birds with abnormal bills.—With reference to previous notes on this subject (*antea*, vol. xlv, pp. 60, 349-50; vol. xlv, p. 402), we have received several more records of bill deformities and the following are worth quoting:

OYSTERCATCHER (*Haematopus ostralegus*).—Mr. W. T. C. Rankin records that on August 27th, 1949, at Red Rocks, Hoylake, Cheshire, one was seen by Messrs. C. B. Williams and C. B. Bell with "a bill about six times the length of the head, and with the mandibles crossed." The bird was very lethargic, but otherwise appeared healthy. Some days later, Mr. Rankin received a report from a boy who had picked up on Hilbre Island what appeared from the description to have been an Oystercatcher whose bill "was about three or four times the length" of that of a stuffed specimen which the boy was later shown.

STARLING (*Sturnus vulgaris*).—Mr. Edward Huyton reports that on January 5th, 1953, one with the exceptional bill-length of 55 mm. (approximately twice the normal size) was trapped at Crosby, Lancashire (see plate 35); this bird had been observed on several occasions during the previous year. The bill was straw-yellow at the base and tip, and black-brown in the middle.

CORN BUNTING (*Emberiza calandra*).—On May 25th, 1953, Mr. R. H. Winterbottom saw one near Twyford, Berkshire, with the upper mandible about half an inch longer than the lower, and slightly decurved. The bird was in full song and appeared to be in perfect condition.

Mr. A. Denby Wilkinson writes to say that, in his experience, the condition is a common one in poultry, both among adults and chicks; in the case of the latter such abnormalities can be caused by their being fed on dry mash. It seems that unbalanced feeding of cage-birds can result in these deformities and several instances of a temporary nature are recorded. In this connection it is interesting to note that for some years during the 1930's Mr. W. T. C. Rankin possessed a pair of Australian Zebra Finches (*Taeniopyga castanotis*) of which the cock continually developed the upper mandible until it had increased by nearly a quarter of an inch in a downward curve. The abnormal part would then drop off, and growth continue as before. The most interesting point about the record of the Starling noted above seems to be the fact that both mandibles were elongated, and the result perfectly symmetrical—many of the records have referred only to the upper mandible, and where both have been abnormally long the tips have usually been crossed, the main exception being that of the Starling preserved in the Royal Scottish Museum, Edinburgh (*vide, antea*, vol. xlv, p. 349), the bill of which is evidently similar to that of the one recorded here.

Purple Herons in Lincolnshire.—On July 31st, 1952, Mr. J. C. Darnell reported the presence of a strange heron at Lambert Hill

fish-pond, Broeklesby, Lincolnshire, and I was able to visit the area in his company the same evening. When first detected the bird was perching on a luxuriant growth of branched bur-reed (*Sparganium ramosum*) in the adjoining canal, its russet appearance immediately catching the eye. When it rose the dark edges to its wings were very noticeable, as also was the long, slender, snaky neck. The neck and throat both appeared very pale. The legs were light yellowish-green, and the bill was yellow both inside and out (the bird frequently gaped when resting). It was obvious that the bird was a Purple Heron (*Ardea purpurea*).

It was next seen perched on an oak, some forty feet from the ground, and its plumage appeared almost exactly the colour of dead oak-leaves. It had previously been silent, but on this occasion when it flew it called nine or ten times. To my ear the call was indistinguishable from that of the Heron (*A. cinerea*), though possibly a trifle weaker. Subsequently it was frequently seen on the wing at the same time as the resident Herons, so comparisons were simplified.

After a few days Mr. Darnell began to suspect that there was in the area a second bird in similar plumage and this was confirmed by Mr. R. May who watched two Purple Herons in the air together on August 12th. The two birds were afterwards seen by various ornithologists, and also by the Earl of Yarborough, the owner of the estate. Many good views were obtained, but at times they were difficult to locate, for when standing amongst aquatic vegetation or grass, with the long, snaky necks extended, they were scarcely detectable. It appears that they roosted on an island in the lake with the Herons. The two were last seen together by my wife and myself on August 31st; on the next day, September 1st, Mr. R. May saw one only and all subsequent visits failed to locate them.

There appears to be only one previous record of the Purple Heron in Lincolnshire—that which was shot on the river Witham at Hykeham, near Lincoln, sometime during the second half of the nineteenth century (although information regarding this record seems very meagre).

S. A. Cox.

[We are very grateful to Reg May in whose company we saw both birds on August 23rd. They were in immature plumage, apparently first summer.—W.B.A., P.A.D.H., I.J.F.-L.]

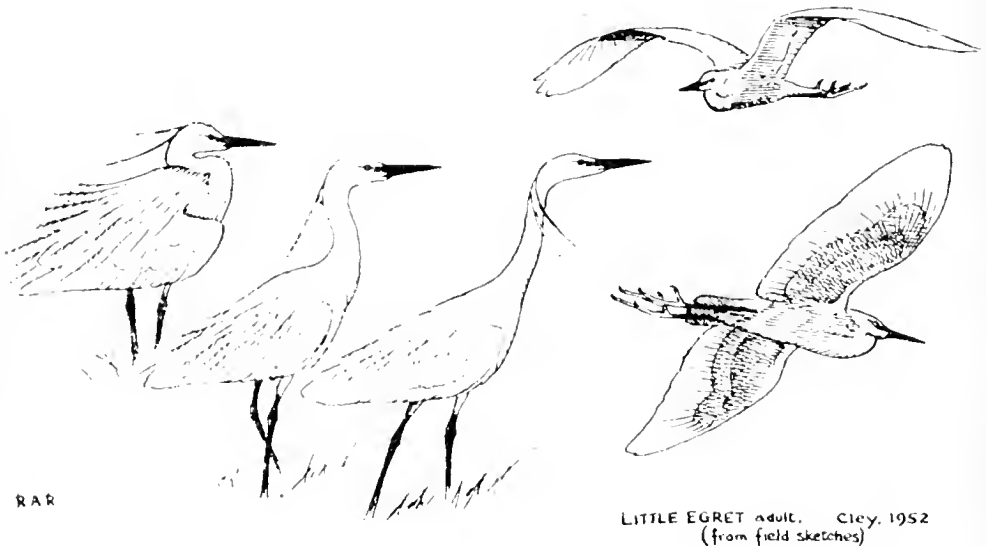
Little Egret in Cornwall.—On March 2nd, 1952, Mr. H. P. O. Cleave and I had splendid views of a Little Egret (*Egretta garzetta*) on the saltings at Trewornan on the Camel Estuary in Cornwall. We are both familiar with the species having together seen many in the Camargue, south France, in 1951, while I had also seen the one on the Camel in May, 1949 (*antea*, vol. xliii, pp. 87-88). In the present instance we clearly noted the snow-white plumage, blackish bill, light eye and blackish legs cut off

sharply to yellow feet. What was presumably the same bird was seen on March 5th by Mr. J. N. Hobbs, and some days later I watched it fishing in the little lagoon at Trevilling, near Wade-bridge; it was racing through the water and snapping right and left. The bird was still in the same area on March 17th.

T. J. WILLCOCKS.

Little Egret in Norfolk.—On May 7th, 1952, Mr. W. F. Bishop, Warden of the Norfolk Naturalists' Trust's sanctuary on Cley Marsh, Norfolk, reported a small white heron with yellow feet. The bird, which remained till May 11th was subsequently seen by many observers and proved to be an adult Little Egret (*Egretta garzetta*) in full breeding-plumage.

The entire plumage was dazzling white with a pendant crest of long narrow feathers and, on the upper-parts, the delicate filigree of the nuptial "osprey" plumes. The bill and tarsi appeared



LITTLE EGRET adult. Cley, 1952
(from field sketches)

blackish, the latter contrasting with the startlingly yellow toes—an unnecessarily garish feature likened by one observer to "yellow chamois-leather gloves." The bird appeared to feed on insects and small aquatic life on a flooded grazing-marsh, walking briskly about and often dashing to one side like a Greenshank (*Tringa nebularia*) to "snick" at something in the grass and water. It was at all times alert and distinctly wary; its obvious self-assurance and perfect condition served to rule out the possibility of its being an "escape" from captivity.

A unique coloured film was taken by Mr. R. P. Bagnall-Oakeley and portrays perfectly the bird's appearance, habitat, feeding-habits, flight and size compared with a Heron (*Ardea cinerea*).

R. A. RICHARDSON.

Little Egret in Carmarthenshire.—On June 7th, 1952, while walking between Wharley Point and Craig Ddu, Carmarthenshire, I saw a white heron, which I deemed to be a Little Egret (*Egretta garzetta*), a species which I have seen in Egypt. The following is taken from a description made at ranges down to 30 yards. Bill: dull black, but once when freshly wet with the sun upon it, it looked grey with a black tip. Body: completely white; long, white crests very noticeable in the breeze; the scapular plumes were visible at 30 yards range when, like the crest-feathers, these soft, delicate plumes were stirred by the breeze. Legs: dull black. Feet: a dull unattractive yellow as it walked through very shallow water, lifting its feet clear of the surface, I thought for a moment or two that its feet were coated with sand. Size: two-thirds that of a Heron (*Ardea cinerea*).

It had an oval shaped body, long slender neck, long legs and Heron-like bill. When first seen it was walking up the shallow stony edge of the river making lightning-like lunges, sometimes following upon a short dash of two or three steps, to secure food—during this performance the body was held horizontally with neck drawn in, but when alarmed by my presence the bird set off smartly along the sand with neck straightened and body tilted. It walked for about 30 yards and then further alarmed by my movement flew, with head drawn in and legs laid back beneath the body, to join a group of 5 Herons and sundry gulls ranged round a pool left by the tide—so that I had an opportunity of judging its size. I saw the bird only on the one day as I was unable to visit the place again.

W. G. LUTON.

Little Egret in Sussex.—On June 10th, 1952, Mr. S. J. K. Eames identified a Little Egret (*Egretta garzetta*) at some shallow pools at Manhood End, near Chichester, Sussex. On June 12th he again saw the bird and informed *The Sussex Bird Report* of its presence. On June 13th I went to see this Egret and had very good views of it, both in flight and while it was feeding and resting. In shape and size it was a smaller version of a Heron (*Ardea cinerea*) with long, slender neck and pointed bill. The whole plumage was pure white with two plumes from the back of the head. The bill and legs were blackish. When the bird was flying away, one could see that the undersides of the feet were yellowish. It flew with neck drawn in and legs projecting. It was a good deal more wary than the Herons present and took to the wing very readily.

This bird was not seen between June 13th and July 2nd after which date it was watched on a number of occasions by various observers, including G. des Forges, G. W. H. Moule and C. W. G. Paulson. It was, however, often absent and undoubtedly had an alternative feeding site (or sites), but only once, so far as I am aware, was it found elsewhere than in the pools mentioned

above or on the neighbouring mudflats, and that was on August 3rd when Miss R. M. Fynes-Clinton watched it on the mud between Itchenor and West Wittering—about 3 miles away. The latest date which I have for the bird is September 1st. This is the first record of the Little Egret for Sussex. D. D. HARBER.

[A photograph of the bird in Sussex, taken by John Reynolds, is reproduced on plate 42. As the dates do not overlap it would of course be possible for all four records described above to refer to the same individual, but see remarks on page 252.—EDS.]

Feeding habits of the Little Egret.—On July 14th, 1952, when I was watching the Little Egret (*Egretta garzetta*) in Sussex, I noticed that when feeding it often agitated the water or mud with one foot and then dabbed its bill quickly under the surface. No doubt this trick of stirring up the water, commonly observed in some other species, is perfectly normal, but it is not mentioned in *The Handbook*. Further, *The Handbook* (vide vol. iii, p. 140) says that the Little Egret's gait and manner of feeding are those of a typical heron, but, although this may be usually so, the bird I watched fed at times very actively, running about fast in the shallow water and suddenly changing direction, much more in the manner of some species of wader than of a heron.

G. W. H. MOULE.

[The behaviour described by the Rev. G. W. H. Moule is typical of the species and indeed the habit of running quickly through the shallows is mentioned by the recorders of all the 1952 Little Egrets, but in view of the fact that it is not brought out in the literature, these extra notes on the Sussex bird are reproduced here.—EDS.]

Observations on the Marsh Harrier with particular reference to clutch-size and nesting-success.—In *The Handbook* it is stated with reference to the Marsh Harrier (*Circus aruginosus*) that clutches of 6 eggs are scarce. This is contrary to my somewhat limited experience in Holland, where between 1939 and 1944 I had under observation a total of 15 nests; the clutch-size was as follows:

	4 eggs	5 eggs	6 eggs
Number of nests ...	7	4	4

In the cases of 14 of these nests I was able to note the nesting-success and this is shown in the following table:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
No. of eggs laid ...	6	4	4	6	5	4	4	6	4	5	4	4	5	5	66
No. of eggs hatched...	6	3	4		3	3	4					3			
No. of young fledged ...	6	3	4	4	1	3	4	4	3	3	3	2	3	2	<u>45</u>

% young fledged of eggs laid ... 68.2

It will be noted that in 7 cases, I was unable to record the exact

number of eggs that hatched, but of the 31 eggs in the other 7 nests, 26 hatched (83.9%); and of those that hatched, 23 fledged (88.5%)—a very low mortality of chicks in the nest. Nest A, where all 6 eggs were successful, was in the middle of a colony of Black-headed Gulls (*Larus ridibundus*) and the nestling harriers were fed for a large part on young gulls that were just able to fly, as I have recorded elsewhere (*Ardea*, vol. xxix, pp. 47-50).

In the paper on "Egg-shell disposal by birds" (*antea*, vol. xxxv, p. 219) it is stated with reference to the Marsh Harrier, on the authority of the late J. Vincent, that addled eggs are not ejected, but in all the cases I was able to study addled eggs vanished after some time, except in clutch L where the addled egg remained in the nest until the young left. In the case of the Montagu's Harrier (*C. pygargus*) it seems that addled eggs are left in the nest more frequently; this is borne out by the frequent mention in the literature of such eggs in nests with large young.

I cannot find it mentioned anywhere that the incubating female Marsh Harrier, when hungry, often sits on the nest calling loudly while awaiting the arrival of the male with food. In fact I have found several nests by locating the calling female.

FR. HAVERSCHMIDT.

Pallid Harrier in Yorkshire.—On October 2nd, 1952, one of two Harriers flying together was shot by Mr. R. W. Gleadow at Hutton Cranswick, near Driffield, Yorkshire, and handed to Mr. Frank Wood. It was an immature bird that, on dissection by Messrs. Edward Gerrard and Sons (taxidermists) of London, proved to be a male. On the basis of the emarginated second primary, which is the only reliable means of separating a juvenile or first winter Pallid Harrier (*Circus macrourus*) from the corresponding plumage of the Montagu's Harrier (*C. pygargus*), its identification as a bird of the former species was confirmed by Mr. J. D. Macdonald and Mr. Derek Goodwin at the British Museum (Natural History).

The skin is now preserved in the Mortimer Museum, Hull, the Director of which, Mr. J. B. Fay, has kindly provided us with a photograph of the mounted specimen. This appears to be the fourth British example of this species, but in this connection it is interesting to note (*vide Y.N.U. Ornith. Div. Report, 1952, in The Naturalist*, no. 845, p. 84) that under *Montagu's Harrier*, T. H. Nelson in *The Birds of Yorkshire* (1907) describes the distinctive features of the Pallid Harrier wing-formula in a bird obtained near Flamborough in 1896. It is also of interest to add that in 1952 there was a remarkable westward extension of the breeding range of this species, which included the nesting of 5 pairs in Sweden.

Common Sandpiper submerging.—It seems worth placing on record that on August 2nd, 1952, I watched a Common Sandpiper

(*Actitis hypoleucos*) at the edge of a reservoir run into the water and disappear completely for a distance of 2 feet or more.

JOHN C. S. ELLIS.

Marsh Sandpiper in Cheshire.—On August 13th, 1952, we were able to identify a Marsh Sandpiper (*Tringa stagnatilis*) at Altrincham sewage farm, Cheshire. We watched the bird for well over an hour and, although it was quite timid and always ready to fly, we were able to stalk it to within 15 yards. In flight without any size-comparison there was very little to distinguish it from a Greenshank (*T. nebularia*) in winter plumage, but when it flew with Redshank (*T. totanus*) its slim build and small size—a little more than three-quarters that of the Redshank—were very noticeable. The feet projected well beyond the tail in flight, but were so thin as to be inconspicuous. On the ground the bird was very graceful and active, feeding both by dipping the bill in the water and by picking from the surface. The prominent field-characters were the grey and white plumage, showing off the dark primaries; the fine, sharply pointed bill; the long, very slender legs.

Plumage details were noted as follows: forehead and sides of head, front of neck pure white; crown, nape and back of neck thickly marked with fine, light grey streaks leaving a suggestion of a white eye-stripe; back pale grey with a few darker markings; wing-coverts brownish-grey; primaries black or dark brown; back and rump white; tail white barred with brownish-grey; underparts white with a few light grey streaks on the sides of the breast; bill black; feet and legs variously appearing pale greenish or greenish-yellow. The call, heard constantly in flight, was a rather feeble, single note rendered "tchu", likened by R.J.R. to the first syllable of that of the Spotted Redshank (*T. erythropus*), by D.B. to the first call of the Wood Sandpiper (*T. glareola*).

It was seen by many observers including Mr. A. R. Sumerfield who saw the bird daily. R. J. RAINES, T. KELSEY AND D. BEHREND.

White-rumped Sandpipers in Lancashire.—On October 11th, 1952, together with M. Jones and A. Shorrocks, we found two White-rumped Sandpipers (*Calidris fuscicollis*) on the sewage farm near Freckleton, Lancashire, feeding with Curlew Sandpiper (*C. testacea*), Dunlin (*C. alpina*), Little Stint (*C. minuta*) and other waders. They were very slightly smaller than Dunlin with much more slender bodies and shorter, straight bills; in each the primaries extended beyond the tail giving a long-tailed effect. The following description was made:

Bill black, and legs blackish. Crown rich brown streaked darker; nape a lighter brown than the crown and also streaked darker; mantle and back darkish brown with darker markings, and some reddish brown. Upper tail-coverts pure white; tail dark brown with edging of white. Wing (at rest):

primaries very dark brown; secondaries dark brown, edged with whitish; some coverts tinged with reddish brown; a lighter area in middle of wing; scapulars brown, some tinged with reddish brown. Light eye-stripe; cheeks below bill grey-brown, streaked. Throat and breast: brown streaking on lighter base, forming a gorget which ended abruptly; belly to under tail whitish; underwing light.

A small part of the white tail-coverts could be seen below nearly closed wings when the birds were on the ground. Whenever one was flushed it was possible to see that the fanned tail was darker in the centre, and the white patch above the tail was very conspicuous. In flight a light area was noted along the wing. Often they ran about in the fashion of Little Stints, pecking and probing in sludge. Particularly during the first few days, they were very aggressive to each other and also charged at other species. The musical "jeet" note was heard occasionally in flight, and once when they charged at each other with wings extended, a bell-like "tit tit tit" was noted; an alarm call "tick tick" was heard when the birds were on the ground.

Both birds stayed until October 18th and one was present on the 19th. They were seen daily and at close quarters by many observers, including A. W. Boyd.

A. HARRISON, N. HARWOOD AND H. SHORROCK.

[The description above seems to imply more redness than I noted in the only one of these two that I saw; in fact I was impressed with its greyness in comparison with a Dunlin. However, as Messrs. Harrison, Harwood and Shorrocks saw the birds more closely and on a number of occasions, the grey colour may have been an effect of the particular light. The breast was noticeably streaked with grey-brown, and the dull white on the belly was not nearly so clear as that on the Little Stints that were also present. I noted the bird as shorter-legged and smaller than a Curlew Sandpiper.—A.W.B.]

White-rumped Sandpiper in Devon.—On October 26th, 1952, between 4.0 and 4.30 p.m. (G.M.T.) a White-rumped Sandpiper (*Calidris fuscicollis*) was watched by us at the Wembury Bird Sanctuary, south Devon. When first seen it was standing on a rock on the shore, having remained behind when we flushed a party of Turnstones (*Arenaria interpres*) which with Oystercatchers (*Hæmatopus ostralegus*) and Ringed Plovers (*Charadrius hiaticula*) were feeding near this spot. It was of Dunlin (*C. alpina*) size and type, but of more slender build, with shortish, straight bill and a marked eye-stripe. Closer view showed blackish legs, and when it flew it revealed a conspicuous white rump, and uttered an unfamiliar note—a thin "yeet" (once a semi-double "yee-yee"). This note, together with the character of the bill, ruled out the possibility of its being a Curlew Sandpiper (*Calidris testacea*) which the white rump might otherwise

have suggested. To make a detailed description was easy on account of the tameness of the bird, which allowed close approach before taking flight. Flushed four times, it flew buoyantly and leisurely to distances up to 100 yards, but returned each time to pitch within a short distance of where flushed. It was watched feeding at the edge of the tide, probing the sand for worms which it washed before swallowing. Its actions in general appeared more graceful than those of the Dunlin; when agitated by proximity of observers it constantly stretched its neck upwards in a manner reminiscent of the Pectoral Sandpiper (*C. melanotos*).

Description.

Size as Dunlin but of more slender build. Bill shorter than Dunlin's, black, almost straight with scarcely perceptible decurvature. Crown ash-brown, showing streaking. Very distinct pale eye-stripe. Mantle ash-brown, more finely mottled than wing coverts, which showed very bold mottling due to brown feathers with pale edges—no tendency of latter to alignment as stripes. Rump white, very distinct in flight. Tail broadly tipped blackish or dark brown, contrasting in flight with white rump. Wings showing no wing-bar in flight but some pale shading. Tips of folded wings projecting beyond tail. Breast finely streaked vertically with brown, forming bib not unlike that of Pectoral Sandpiper, streaking extending to flanks. Rest of under-parts white. Legs blackish, hind toe clearly visible.

The area was searched on most days of the following week, but the bird was not seen again.

D. B. HUNT, O. D. HUNT, J. R. F. COOPER AND FOSTER COOPER.

[In connection with these two records, it is of interest to note that the first White-rumped Sandpiper to be recorded on the Continent* was observed at the bird-sanctuary "De Beer" near Hook of Holland (*Limosa*, vol. xxv, pp. 169-170) on October 26th, 1952—the same day on which the one was seen in Devon. If the Devon and "De Beer" records were the only two, it would not be unreasonable to draw the conclusion that they had arrived as a result of the strong westerly gales which appeared to be the ultimate cause of the remarkable "wreck" of Leach's Petrels (*Oceanodroma leucorhoa*) and to be concerned in the arrival of Yellow-billed Cuckoos (*Coccyzus americanus*) in Sussex and Shetland (*antea*, p. 218) and of an American Robin (*Turdus migratorius*) on Lundy. However, the Lancashire birds arrived before that period and it is just as likely that the other two records were connected with them.—EDS.]

*though what was probably a bird of this species was seen near Texel, Holland, on August 21st and 24th, 1952 (*Limosa*, vol. xxv, p. 182).

Great Skuas on the Scottish mainland.—It was reported to me that a pair of Great Skuas (*Stercorarius skua*) had nested in Caithness in 1949, but that the nest had been robbed. I visited the locality on June 17th, 1951, and found a pair of Skuas weakly defending a territory. There were several typical scrapes, but no sign of eggs.

I was unable to visit the place in 1952, but fortunately I was able to receive periodical reports from a reliable observer. Two Great Skuas appeared about the middle of April, and on May 11th they "made all the swooping down motions of nesting skuas". On May 17th a freshly killed Skua was found on the territory, decapitated and with the breast torn out, but a pair was still present. A few days later two pairs were seen about two miles away, and on June 25th a nest with one egg was found. On this occasion three birds were present, two of which remained to defend the territory. The nest was empty on the next visit, ten days later, but there was no sign of young birds and it is thought that the egg or eggs had been destroyed, possibly during a routine extirpation of gulls' nests by a gamekeeper.

IAN D. PENNIE.

Census of Swallows in the Sedbergh area, N.W. Yorkshire, in 1952.—In 1938 and in 1942 a census of nesting Swallows (*Hirundo rustica*) was taken in an area of 4,250 acres round Sedbergh, Yorkshire (excluding the town itself), and the results were published in *British Birds* (*antea*, vol. xxxii, p. 337 and vol. xxxvii, p. 32). In 1952 a similar census was taken; again the town of Sedbergh and the village of Millthrop were not included. The results for each of the three years are compared in the following table:

Year.	No. of breeding pairs.	Pairs per 1,000 acres.
1938	73	17.2
1942	64	15.1
1952	117	27.5

These figures show a remarkable rise in density, which is now high for the type of country found in this Pennine valley, when comparison is made with other counts recorded in the Swallow Enquiry (*antea*, vol. xxix, pp. 3-21 and vol. xxx, pp. 98-116).

In the cases of 30 nests it was possible to record the nesting success in 1952:

Total of eggs laid.	Total of young fledged.	% success.
142	112	78.9
Average clutch-size.	Average no. of young fledged.	
4.7	3.7	

These figures are paralleled by those quoted in the Swallow Enquiry.

It is perhaps of interest to add that 15 Wrens' (*Troglodytes troglodytes*) nests were found in the disused nests of Swallows; this is a habit recorded from many parts of England.

E. I. CUTHBERTSON.

Red-rumped Swallow in Norfolk.—On March 6th, 1952, a bird subsequently identified by W. F. Bishop and J. Johnson as a Red-rumped Swallow (*Hirundo daurica*) was seen at Cley, and later at

Blakeney, Norfolk. In the days that followed its favourite haunt was the quay at Blakeney, but it frequently disappeared for some hours, even returning to Cley on several occasions. The bird was watched for many hours by a large number of observers including Dr. B. B. Rivière, R. P. Bagnall-Oakeley, G. T. Kay and P. A. D. Hollom, apart from the writers. It was last seen on March 25th.

Most of its time was spent on the wing, but it often perched on electric wires and the outside twigs of small trees. In direct flight it resembled a Swallow (*H. rustica*) although the absence of a gorget was noticeable and the tail-streamers were thicker (or wider) and distinctly incurved—like the sail of a Sinhalese katamaran. With the tail closed, the streamers crossed each other; when it was spread, the lack of white spots was apparent. While feeding, the bird more closely resembled a House Martin (*Delichon urbica*) with that species' steep, fluttering climbs after high-flying insects, long glides on horizontal wings (slightly upswept at the tips) and the pale rump which at times appeared almost white. When it alighted, it jerked its tail once or twice like a Swallow, and then held its wings loosely beneath the tail. The bird was twice seen to dip down and try to drink from the glass roof of a conservatory, evidently mistaking the shining surface for water, before flying to the harbour and taking one sip of salt water. It was suspected of roosting in a barn at Blakeney, but this was not proved.

The following description was made during several hours watching: crown and mantle steely blue-black; nape, neck and superciliary stripe orange-red ("Brambling-colour"); dark smudge through eye; upper rump orange-red shading to pale biscuit on the lower rump; upper and under tail-coverts black; wings and tail blackish-brown, latter with no white spots; entire under-parts pale reddish-buff; under wing-coverts the same except for blackish primary-coverts; bill dark; legs and feet perhaps rather paler than Swallow's. On March 16th P. A. D. Hollom heard it give two or three harsh, throaty twitters when it perched on a telephone-wire; otherwise no notes were heard.

M. MEIKLEJOHN AND R. A. RICHARDSON.

[A drawing by R. A. Richardson of this bird, made from his field-sketches, is reproduced on plate 42.—EDS.]

Red-rumped Swallow on Lundy.—On March 27th, 1952, whilst walking along the cliff-edge above Goat Island on the west coast of Lundy, John Ogilvie and the writer were rather surprised to see a swallow with a sandy-chestnut rump flying by. The bird remained about the west sidelands of the island, where there was protection from a fresh easterly breeze, throughout the day, feeding in company with a Swallow (*Hirundo rustica*) and two

Sand Martins (*Riparia riparia*). It was seen on several occasions at distances of less than ten feet, in excellent light, and the following details were noted: size, slightly larger than the accompanying Swallow, body rather longer in proportion; blue sheen on back and crown; wings and tail a drabber, sooty colour; tail long and deeply forked; nuchal band chestnut; rump rich sandy-chestnut, paler towards tail; under-parts a warm sandy-buff colour. The bird was obviously a Red-rumped Swallow (*H. daurica*).

PETER DAVIS.

Red-rumped Swallow on Great Saltee, Co. Wexford.—At about 0630 hours, G.M.T., on April 10th, 1952, B.H.H. glimpsed a swallow with a pale rump near the farmhouse on Great Saltee, Co. Wexford. We found it again at the Landing-Place (100 yards away) at 0800 hours and were able to identify it as a Red-rumped Swallow (*Hirundo daurica*), the first recorded in Ireland. Like one of two Swallows (*H. rustica*) that were with it, it hawked constantly to and fro over the rocks and beach during the morning, only pausing for a little while every 5 or 10 minutes to perch on a stick or stone. All three birds disappeared during the afternoon, but they returned to the Landing-Place in the evening. Next morning (April 11th) very early, the Red-rumped Swallow, still with the two *rustica*, was feeding round the farmhouse and resting on bare tree-branches. It was last seen about 0800 hours.

The bird was watched in the air at very close quarters and perched at ranges down to 10 yards. The flight seemed to resemble that of *rustica* exactly, but wings and tail were shorter. In flight, from behind or above, the most striking feature was, of course, the pale rump, contrasting with back and tail. It was salmon-pink or orange-buff in colour, whiter on upper tail-coverts. From the front and side it looked quite different from *rustica*. The whole under-parts were whitish, tinged orange-buff. No streaks could be made out, even at the closest range. In flight, sides of head appeared chestnut (and the nuchal patch was not distinguishable) but, when perched, chestnut was seen to run across nape and round the eye, enclosing a dark blue cap down to bill. Compared with *rustica*, blue of upper-parts was less intense (with a bronze sheen on flight-feathers) and there was no white in tail. Call (uttered infrequently) was also less sharp, a single "kwep."

P. W. P. BROWNE AND B. H. HARLEY.

[This species is a very rare vagrant to Britain, having been recorded only on four or five previous occasions, and it is just possible that the three occurrences in 1952, described in the accounts above, all refer to the same individual: the dates do not overlap.—EDS.]

Rooks breeding in Shetland.—Hitherto the Rook (*Corvus frugilegus*) has been a passage migrant and rather rare winter-

visitor in Shetland. During the early part of 1952, however, it became abnormally abundant in the islands, and Kenneth Williamson tells us that daily counts in the Fair Isle show that there this influx commenced on February 21st with the arrival of 38 birds. Numbers in the isle remained in the twenties and thirties until March 13th, and Rooks were reported to us from many parts of Shetland until late March and early April.

Eighteen birds remained at Kergord Plantations, Weisdale. These nine-acre plantations, the largest in Shetland, have been described by the writers in *J. Anim. Ecol.*, 1948: 66-74; 9 nests were built during April in Japanese Larch (*Larix kaempferi*) and Sitka Spruce (*Picea sitchensis*). One adult was shot, but the remaining 8 pairs apparently all bred successfully and on May 22nd hatched egg-shells were found and adults were seen flying in with food. On June 24th the total Rook population in the area was 42 birds so it would seem that the 8 nests averaged about 3 free-flying young apiece.

At least 50 Rooks wintered in the vicinity (i.e. more than the "resident" population) and all the trees and 5 of the nests survived the hurricane of January 31st, 1953. In late April and early May, 1953, there were 11 nests and a total population of 36 to 38 birds.

This is a considerable extension of breeding range: the nearest rookeries are c. 100 miles to the south in mid-Orkney and c. 180 miles to the east in Norway. L. S. V. AND U. M. VENABLES.

REVIEWS.

Yorkshire Birds. By Ralph Chislett. (A. Brown & Sons, Ltd., 1953). 25s.

Mr. Chislett lists among his qualifications for this work a professional training as a chartered accountant, and although he notes sadly that the application to bird records of effective checks on accuracy cannot be achieved in a similar way his determination to apply high critical standards and to seek exactness in every statement will earn him the gratitude and respect of future as well as present ornithologists. "I would rather omit a genuine but non-proven record than admit a doubtful one unqualified" is a characteristically terse expression of this attitude, which will be warmly endorsed by all responsible editors, even if they shrink from introducing the Yorkshire Naturalists' Union custom of preceding the issue of a Report by "the public correction of the proofs at an afternoon meeting of the whole Vertebrate Section held in March and attended by most of those who have contributed notes"

The treatment of individual species is preceded by an introduction summarising the status of Yorkshire birds and by two chapters on physical and topographical features and on migration. Including subspecies 355 forms are listed, of these 97 being classed as breeding residents and 37 as breeding summer-visitors, while regular winter-visitors and passage-migrants add only 32 more. Among residents the Raven, Woodlark, Stonechat, Peregrine, Buzzard, Twite and Lesser Black-backed Gull are starred as scarce or local, but the Willow Tit, Fulmar and Black Grouse are not. The Red-backed Shrike, Black Redstart, Gannet and Spotted Crake are shown as occasional breeders.

Among the accounts of individual species we note the occurrence, after a half-

century's interval, of Serins in a party of eight in 1950; the extreme rarity of recent records of the Cirl Bunting, given by Nelson as resident in Yorkshire; the continued rarity of Lapland Buntings; the partial or complete disappearance of Woodlarks between 1906 and 1945; the very erratic status of the Stonechat; the restriction of the Nightingale as a breeder to one area of South Yorkshire (much more limited than that indicated by Nelson nearly fifty years ago), in which the bird is in most years confined to a few pairs near the county boundary.

In stating that "in the spacious days of falconry . . . the Heron . . . was far more numerous than in 1906, or to-day" the author departs for once from his customary reliance on proven facts, unless he is in possession of some which have not been published. Moreover, if the statement is correct, which is a matter of opinion, the decrease is more likely attributable to restriction of feeding areas and supplies than to reduction of numbers or size of local heronries as is here implied.

As the 1886 Yorkshire record of the Siberian Meadow Bunting is still the only one for Britain special attention must be given to the square-bracketing of this occurrence by Mr. Chislett on grounds which certainly suggest that its inclusion in the British List needs reviewing. He also throws some doubt on the validity of the recently claimed Yorkshire occurrence of the American Bald Eagle (*Haliaeetus leucocephalus*) in 1865 (*antea*, vol. xlii, p. 339).

The Stone Curlew is recorded as having ceased to breed since 1937 and it is unpleasant to learn that the last recorded was discovered "shot but alive on the shore" in 1951 and died later.

A Pallid Harrier is recorded as having been shot in 1952, representing an addition to the Yorkshire List (*cf.* this issue, p. 259).

The map of Yorkshire at the end gives some useful grid references, but as a map it is disappointing. E.M.N.

Vie et Mœurs des Oiseaux. By Paul Barruel. (Horizons de France, 39 Rue du General-Foy, Paris 8me, 1953). Pp. 208 including 80 pp. of illustrations in black-and-white and additional text diagrams and charts, and with 16 coloured plates. Cloth bound 2,950 frs.

This admirably produced and somewhat magnificent new French popular bird book is perhaps even more significant as a symptom of the growing and changing French interest in its subject than on account of its own merits, considerable as these are. The publishers announce it as the first of a series, *La Nature Vivante*, whose scope, so far as it is indicated, appears roughly comparable to that of the *New Naturalist* series here, whereas M. Barruel himself with his combined talents for painting, for observation and for clear simple scientific exposition is developing a role more like that of Mr. Roger Tory Peterson.

The large quarto format and lavish illustration are clearly aimed at a mainly non-ornithological audience, but the publishers and the author have exercised a most creditable restraint in strictly avoiding rhetoric and sensationalism and in sticking to a straightforward and well-disciplined presentation of the facts. Most of these are necessarily based largely on work already familiar to the reasonably well-read British ornithologist, who will not find much new to him in this book, although it does make a more determined and successful effort to treat the subject in a world-wide context than several of those which have sought to cover much the same ground in this country. A strikingly high proportion of the excellent photographs are contributed by British bird photographers. The text treats first such daily activities as waking and sleep, movement and feeding and then deals somewhat less summarily with reproduction, and again more briefly with migration, social life and population. Although inevitably fairly generalized and lacking in specific references the text appears accurate and up-to-date within its imposed limits. It is however impossible to account for the extraordinarily inflated densities quoted for bird populations (50-100 birds per hectare in European forests, and up to 300 per hectare in parks and gardens, for example) unless by

guessing that the author may have converted these from densities per acre and in doing so mistakenly placed the decimal point so as to make 24.7 acres per hectare instead of 2.47. E.M.N.

Enjoying the Country. By E. Fitch Daghlish. 232 pages. (Faber & Faber, 1952). 18s.

As its name would seem to imply this is primarily a book for town-dwellers or those to whom country life is not familiar. It deals with various aspects of natural history throughout the year. Seven chapters about birds—bird movements, night birds, birds in winter, spring and summer, courtship and nesting, and families—include many personal observations. The book as a whole will interest mainly those beginning to take a general interest in nature.

Some few facts are open to question. To state that there is hardly a fine day throughout the year on which the Skylark's song may not be heard is directly contrary to the saying (Kentish, I am told) "as dumb as a lark in August" and to general experience. The Fieldfare has not a conspicuous white line over the eye, like the Redwing. To those who have often seen flocks of very considerable size it will seem strange to read that "the Goldfinch is not strongly gregarious." A small point: Claridge Druce records the water violet from both Scotland and Ireland, whereas Mr. Daghlish says it is found locally in England, but not elsewhere in Britain. A.W.B.

Birds of the Field. By James Fisher. (Collins, 1953). 3s. 6d.

This and *Butterflies of the Wood* by S. & E. M. Beaufoy are the first two volumes in a new Collins series, "The Country Naturalist", whose stated aim is to give a preliminary introduction to the communities of plants and animals within various types of country. An immediate reaction is one of admiration at the wealth of photographs in this small book, so that it is then very disappointing to find that many are not new—for example, of the 16 coloured plates (there are also 23 black-and-white), 14 have already appeared in E. M. Nicholson's *Birds and Men*. Though it is probable that the book will not be bought by the same people as those who subscribe to the superb "New Naturalist" series, this seems a little unfair even if the price is thereby kept down.

The text, after an explanatory introduction, is devoted to short accounts of 40 "real field birds", the selection of which is somewhat arbitrary—many will find this false grouping unsatisfactory. Some of these outlines are very thin, but others like that on the Rook give an interesting summary and include up-to-date information (although it is incorrect to say that the Rook does not breed in the Shetlands, which it has recently colonized*). Statements of the "probable" numbers in England and Wales are given for many of the species: that for the Rook is of course justified, being based as it is on the extremely thorough and comparatively recent survey (of which Mr. Fisher was the organizer), but the other bald figures of "seven million", a "third of a million", and so on, are included without reference to the manner in which they were obtained. In fact, they seem to be the same estimates, based on sample counts, as were last put forward by the same author in his *Watching Birds* (1940) (*vide* pp. 101-102), but no allowance of the possibility of considerable alteration appears to have been made (notice that the Rook was estimated at 1 $\frac{3}{4}$ millions in *Watching Birds*, and 3 millions after the census) and in some cases the reader is left with the false impression that there is little room for error; the estimate for the Jackdaw ($\frac{3}{4}$ million) is the same in this book as in *Watching Birds*, but was originally for England and Wales, and now covers Scotland as well! The figure of "150,000 (or so)" Black-headed Gulls is presumably based on the total estimated during the 1938 survey of the known colonies (*antea*, vol. xxxiii, *vide* p. 206), but two-thirds of this 1938 figure was made up of an estimated 50,000 pairs at Ravenglass, Cumberland—a calculation which S. Marchant has recently shown (*antea*,

* *vide* this issue, pp. 265-266.

vol. xlv, pp. 22-27) to be a gross exaggeration, so that the total breeding population of England and Wales is more likely to be nearer 70,000 birds; but how cautiously one must treat these large estimates.

There are several other misleading points in this book, for example the statements that Yellowhammers "always breed under cover on the ground", that the best recognition-character of the Tree Sparrow "is the 'copper-nob' of the male" (but the sexes are similar in this bird), and the use of the name "French Partridge" as a caption to plate 30b when in the text it is only referred to as "Red-leg or Red-legged Partridge".

This book is of little value to the confirmed bird-watcher though it will doubtless be approved by the general public. I.J.F.-L.

Spotting British Birds. By S. Vere Benson. (F. Warne & Co., 1951). 17s. 6d.

The more interesting part of this nicely produced book consists of simply told accounts of visits to well-known bird-haunts: the Broads, islands in the west and north, the Highlands, the Orkneys.

The author, who is a keen protectionist, also deals with birds according to habitat, such as garden, woodland, shore, reedbed and marsh, and the like. The effects of the bitter winter of 1946/47 on waders and duck are well told. Notes on field-characters, which are given for each species, are not nearly so useful as they might be and are often quite inadequate. It would have been better to give these characters more fully and for both sexes and young birds or not at all. To say for example that "the Rook may always be distinguished from the Crow by the bare whitish patch round the base of the bill" is most misleading for the novice. Young Rooks retain the bristles on what will later become a bare patch until well after their first winter and must often be seen feeding in fields in this state of plumage. The Whimbrel is surprisingly spelt "Wimbrel" throughout the book and also in the index. A.W.B.

The Bird-Watchers' Field Pocket Book. (Seeley Service & Co., Ltd.). 3s. 6d.

This is a small pocket-file, $5\frac{1}{2} \times 4\frac{1}{2}$ inches, on an unsatisfactory loose-leaf system, containing outline drawings of six broad types of bird (perching bird, duck-goose, seabird (= gull), wader, hawk, owl) with lines indicating the main parts on each. The idea is that the colour of each part of an unusual bird may be noted down in the field and the blank (faintly printed) outline amended to show its shape. For those who, like the reviewer, have great difficulty in drawing a field-sketch that is at all in perspective, this may prove invaluable. Beneath each outline is a questionnaire to ensure that details of size, flight, song, gait and so on are noted down on the spot. There are 41 pages of these blank outlines and other pages where sketches can be made of birds not falling within the six categories. Refills are obtainable and will be needed by most observers to build up the stock of wader outlines, of which there are only three. There is at the end a bird list which needs revision in future editions, for at present it includes such extreme rarities as Spotted Sandpiper, but not certain commoner species as the Spotted Redshank and Spotted Crake; one or two strange birds such as "Malanistic (*sic*) Pheasant" and the Long-tailed Bee-eater should be removed. The publishers have brought out an original contribution to field-identification which should prove of considerable use. The basic idea is sound and the pocket-book can be recommended. I.J.F.-L.

The Birds of Crater Lake National Park. By Donald S. Farner. (University of Kansas Press, Lawrence, 1952). \$1.25.

This is a well-documented account of the avifauna of an area of 250 square miles in the Cascade Mountains in southern Oregon, with illustrations from photographs showing typical habitats in the Park. W.B.A.

Bird Lore. By C. E. Hare. (Country Life Ltd., London, 1952). 18s.

In this book various legends, rhymes and ancient fables concerning birds have been collected, but to an ornithologist their arrangement does not appear to be based on any principle. Some chapters are devoted to individual birds, others to several, e.g., Chapter 5 deals with "The Magpie and Blackbird" and Chapter 14 with "The Lapwing and Hoopoe." The author's lack of knowledge of ornithology leads him into numerous errors, for instance on page 73 we are told that Eagles were once plentiful in Wales. "Though all except the Golden Eagles have departed, the local people will say, when bad weather is coming, that 'the Eagles are breeding whirlwinds on Snowdon'." It is of course at least 150 years since any sort of eagle was resident in Wales.

There is an appendix giving lists of what are called "Provincial Bird Names" but many of these are old-fashioned book-names, or names applied by early writers to species in various stages of plumage thought to be distinct, and have certainly never been in use locally, e.g., "Cinereous Godwit" and "Green-legged Horseman" given as provincial names for the Greenshank, and "Solitary Thrush" for the Starling. The Stone Curlew obviously cannot have had a local name in Cheshire, where it has only twice occurred as a straggler, and in fact the names given, "Collier" and "Collierjack," are stated by Coward to be local Cheshire names for the common Curlew. W.B.A.

The Bird: Its Life and Structure. By Gertrud Hess, translated from the German by Phyllis Barclay-Smith. (London: Herbert Jenkins, 1951). 18s.

Nearly half this book (100 pages out of 220) is occupied by a long chapter on the "Structure and Function of the Bird's Body" in which special emphasis is placed on the anatomical modifications in all parts of the body adapting the bird to an aerial life and an account is given of the various forms of wings and the different types of flight for which each is specially suited. In the reviewer's opinion this is much the best part of the book and forms a justification for its translation into English. Shorter chapters deal with Migration, Reproduction (including an account of the development of the embryo), Classification, Extinct and Vanishing Birds, and the Ancestry of Birds. These are much less satisfactory.

In such a brief space it is quite impossible to deal adequately with every aspect of bird life and numerous statements are made in general terms which do not really apply to all birds. In addition there are a number of entirely erroneous statements. The Gannet is said to occur "on the sea coasts and the broader inland waters of the warmer zones" (page 154). "The Geese, Swans and surface-feeding Ducks never dive" (page 154). "There is no exact description of the Great Auk" but it "must have bred on the islands of the cold Atlantic where up to quite recent times mummified corpses, buried in guano, have been found from time to time" (page 221).

The illustrations are from sketches by the author and many of them are decidedly crude though on the whole they are helpful towards an understanding of the text. W.B.A.

Bird Migrants. By Eric Simms. (Cleaver-Hume Press, Ltd., 1952). pp. 212. 15s.

The author, whose plan it has been to summarize much that has been learnt about bird migration and to discuss the various theories put forward by many writers, has studied carefully the literature of the subject and acknowledges his debt to these writers and numerous observers in a bibliography of 13 pages. As he pertinently observes, his account of recent research into bird "navigation" makes rather depressing reading, for no sooner is a theory advanced than someone contradicts it or at least calls it in question. These chapters, full of facts and thorough though they are, seem at first sight to be overburdened with too much actual detail, so that the reader may find it difficult to draw his own conclusions, but they include many personal observations and it is

in these that a reader, already conversant with some of the literature quoted, will find most interest. Mr. Simms and his friends have made a special study of inland migration and, after a chapter on this as it applies generally in Britain, he deals in particular with what he calls the "Cotswold Corridor," a migration route running S.W. in autumn, where birds are deflected by the hills to form a narrow stream—a concentration similar to that discovered by Dr. Lack along the Chilterns. For two years Mr. Simms was able to make almost daily observations and these are fully chronicled and in one year compared species by species with migration records made on the Wash, in eastern England. Many of these records show what large numbers of birds use this route, but others are so meagre (some even of single birds of a species) that they might with advantage have been disregarded. A.W.B.

NOTICES AND REQUESTS FOR INFORMATION.

The 11th International Ornithological Congress.—The 11th International Ornithological Congress, presided over by Sir Landsborough Thomson, London, will be held in Basle, Switzerland, from May 29th to June 5th, 1954.

During the week of the Congress, 5 days will be devoted to meetings and 2 to excursions. Before and after the Congress (May 25th-28th and June 7th-19th) excursions will be arranged to enable members to become acquainted with the Swiss avifauna, especially of the Alps and Lower Alps. The Congress fee is 30 Swiss francs.

The prospectus, containing registration form and detailed informations, will be distributed this summer. Applications to attend, and to contribute scientific papers, should be sent in before February 28th, 1954, and addressed to:

XITH INTERNATIONAL ORNITHOLOGICAL CONGRESS,
ZOOLOGICAL GARDEN, BASLE, SWITZERLAND,

which is at disposal for any inquiries needed.

This information is contained in an advanced announcement which we have received from the General Secretary of the Congress.

"Invasion" of Crossbills.—We have recently received reports from Kenneth Williamson, and also from P. E. Brown and L. S. V. Venables, which show that Crossbills (*Loxia curvirostra*) have been arriving in numbers in the northern isles since June 14th, 1953, when a few first appeared at Fair Isle and at Boddam in Dunrossness (south of Shetland). The onset of the movement seems traceable to polar anticyclonic weather over Scandinavia, Finland and northern Russia with airstreams generally favourable for a trans-North Sea drift to Scotland; although it is early to draw definite conclusions, it seems certain that 1953 is to be an "invasion" year. In the Shetlands Crossbills have been arriving steadily on Unst and Foula. At Fair Isle, following the location of two adult males on June 14th, there was on June 15th, in addition to these, a party of 9 including only one old male; on the 16th there was a flock of about 40 (with 7 red males) elsewhere on the island. Thus the numbers built up until June 18th after which apparently this first "wave" moved on, for there were then many less until June 24th when, however, a flock of 50 was located. On June 25th the flock consisted of 63 birds and similar numbers were continually present until June 29th on which day there was a considerable increase and over 120 were recorded in one flock (in addition there was on the same day another smaller group of 40 which may or may not have broken off from the larger flock after that was counted); it was estimated that about a quarter of all the birds seen up to this time were adult males. In the Orkneys P. E. Brown saw many in the last ten days of June. Such numbers are of course quite abnormal in the northern isles and we have received news of flocks in Sutherland, Ross-shire, Fife, the Solway area, Yorkshire, Essex, Kent, Surrey, Oxford, Dorset and Devon in late June and early July which provide confirmation of a large immigration. We shall be very glad to receive any records so that the extent of the "invasion" may be ascertained.

27 JUL 1953

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LETTERS.

BARDSEY BIRD AND FIELD OBSERVATORY.

To the Editors of BRITISH BIRDS.

SIRS,—At a meeting held in Aberdaron on March 7th, 1953, a committee was formed to establish a permanent observatory on the island of Bardsey. The position of the Island, at the very tip of the Lleyn Peninsula, makes it an ideal site for the study of bird migration and the little work that has already been done there clearly indicates that the establishment of an observatory would most certainly be worth while. The committee, consisting of naturalists from North Wales, with representatives of the West Wales Field Society, the West Midland Bird Club and the Island itself, has arranged for the tenancy of a house on the Island and it is now necessary to put this in order and to provide the basic furniture and equipment for the observatory. It is desired to complete the initial preparations early in the summer so that serious work can start before the autumn migration begins. It is intended to provide equipment so that observers can look after themselves and, for the use of the furnished accommodation, there will be a small charge of about 3/6 per day.

To do this we need a considerable amount of money to purchase such basic essentials as bunks, blankets, cooking equipment and utensils and to meet the expense of putting the house itself in condition, and so we now ask for your generous support of the Bardsey Observatory Fund. Everyone contributing five shillings or more will be enrolled as A Friend of Bardsey Observatory, and will receive a copy of the Annual Report which it is intended to produce. In addition, volunteers for pioneering work are required. The Hon. Secretary, W. M. Condry, Felin y Cwm, Eglwysfach, near Machynlleth, Montgomery, will be glad to give details of accommodation and transport. A stamped addressed envelope should be enclosed.

W. H. WYNNE-FINCH, *President, Lord Lieutenant of Caernarvonshire.*

R. M. LOCKLEY, *Acting Chairman (Chairman of West Wales Field Society).*

C. A. NORRIS (*Chairman West Midland Bird Club*).

THE USE OF DELFWARE POTS AS NESTING-HOLES FOR HOUSE SPARROWS.

To the Editors of BRITISH BIRDS.

SIRS,—With reference to W. Meise's letter under the above heading (*antea*, p. 36), I write to point out that in a poem by Thomas Randolph, addressed *To his well Timbred Mistresse*, and first published in the second edition of his *Poems*, 1640, occur the lines:

Another story make from wast to chinne,

With breasts like Pots to nest young Sparrowes in.

Randolph died in March, 1635, and these lines may be the earliest reference to these pots in England. It is likely that they were introduced by the Dutch engineers who were draining the Fens in the 1630's and to whom Randolph elsewhere refers.

E. J. M. BUXTON.

[Mr. Hubert E. Pounds has drawn our attention to a note bearing on this subject which appeared in *British Birds* in 1908 under the title "Old English nesting bottles" (*antea*, vol. ii, pp. 164-165); in this, the late Mr. E. G. B. Meade-Waldo notes that such pots were in common use in Kent and Sussex a century, and even 40 years, before, but by the time he was writing it seems they had fallen into disuse. There is also an illustration of these pots on p. 148 of *A History of the Birds of Kent* (Ticehurst, 1909).—Eds.]

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BRITISH BIRDS

NUMBER 8, VOL. XLVI, AUGUST, 1953.

FIELD OBSERVATIONS ON THE BIOLOGY OF THE MARSH TIT.

BY

AVERIL MORLEY.

(Continued from page 238.)

(2) SONGS AND CALL NOTES.

SONG-PERIOD.

The role of song in the life of the Marsh Tit is a somewhat puzzling one. The species is resident, and territory held and defended throughout the year, yet song is mainly confined to the months of pre-breeding and breeding activity, mid-January to May. H. G. Alexander, in Witherby *et al.* (1938), shows the Marsh Tit on his chart of song-periods as having irregular but fairly frequent song from the first half of January, regular song from mid-January to the first part of April, from then to mid-May irregular, and exceptional from mid-May to the beginning of August, when song ceases. Exceptional song is again heard from mid-October to mid-December, and from that time irregularly to mid-January. The small population in the study area showed, as might be expected, a more sharply defined season. From 1939 to 1942 the dates when song was first heard were respectively January 14th, 12th, 13th, 17th. On these dates several birds were heard, whereas before there was silence. Song was maintained, with a climax in February and March (see Table 3) to about the last

TABLE 3: INCIDENCE OF SINGING MALE MARSH TITS IN HOURS OF OBSERVATION, JANUARY—MAY.

Month	No. of records of birds singing	No. of hours	Incidence I in 1.6 hours
January ...	13	20.75	
February ...	58	41.5	.7
March ...	61	45.3	.7
April ...	41	43.3	1.1
May ...	18	37.75	2.1
Total ...	191	188.6	

ten days of May, the dates from 1939 to 1941 when it was last recorded being respectively May 21st, 23rd and 20th. The date for 1942 was not noted. There were a few records of birds singing in June, July, September, November and December, but all, except the one November record, were scraps of incomplete song given in territorial disputes.

DESCRIPTIONS OF SONGS AND OCCASIONS WHEN USED.

Only males were known to sing; no known females sang, unlike the Willow Tit (*Parus atricapillus*) as recorded by Foster and Godfrey (1950)*. Song was given from the oak canopy and shrub growth; singing birds were not seen to descend lower than c. 4 feet from the ground. The bird, when singing seriously, moves its head in the line of a convex curve from side to side, beak opened wide at each note, and throat pulsing. Frequently the wing-tips are slightly drooped. The bird often sings when on the move and appears to be foraging, but a close inspection of such a singing bird sometimes shows that such feeding is largely pretence, the bird moving through the twigs much more rapidly than in real foraging. A female in company with a singing male sometimes dictates his route round the territory, though she may be moving through vegetation at shrub and herb level while he is above in the upper branches of the oak canopy; but sometimes it is plain she is following his course in the territory. A singing male may keep himself persistently stationed between the foraging female and an unmated male neighbour when the pair are near the common boundary.

The commonest song in the writer's experience was the loud ringing, bell-like rattle, syllabled in *The Handbook* (Witherby *et al.*, 1938) as *schip-schip-schip . . .*, but which to my ear had a more incisive quality, *chip-chip-chip . . .*, with about 5-7 repetitions of the *chip*. The song has definite variants: (a) a slightly lower-pitched, more liquid *chup-chup-chup . . .*; (b) a swifter, more excited trill, *chi-i-i . . .*, usually under heightened emotional stress during territorial conflicts; (c) a high, hard, flat and unmusical *chee-chee-chee . . .*; (d) a lower-pitched but similarly flat, dull *chew-chew-chew . . .*, very unmusical and perhaps the most uncommon variant heard; (e) a beautiful low, throbbing, Nightingale-like *yu-yu-yu . . .*, mainly associated in my experience with coition (Morley, 1949) and other breeding-season behaviour, but occasionally used in territorial battles from January to April.

Two-syllabled and three-syllabled songs are also sung. They can be written respectively as *te-teep*, *te-teep . . .* (or *te-tewt . . .*), or with the accent reversed, *tu-ti*, *tu-ti . . .*; and the tri-syllabic *te-t-teep*, *te-t-teep . . .*, or *ti-tlui-ti*, *ti-tlui-ti . . .*, the last being close to the note described as the "battle-cry" note associated with strife, and described below. These songs are given mixed. For example, on February 15th, 1941, a mated male sang for 30 minutes, 9.15-9.45 (G.M.T.) a total of 246 songs, the first 90

*Hinde (1952) records female Marsh Tits singing, but it is not clear which song is used. [Hinde's valuable work did not appear till some months after the acceptance of the present paper by the Editors of *British Birds*, so it has not been possible to refer to it in any detail.]

being *chip* phrases, then 27 *chee* phrases, then 10 two-note songs, and the remainder as *chip* phrases. 363 songs were timed and averaged 7 songs a minute, including the short pauses between each song.

Singing on the part of one male frequently stimulated others within earshot, and neighbouring males engaged in song duels, one singing a phrase and the other replying. Occasionally two singers flew towards each other to their common boundary, shouting their challenges from the tree-tops. Such encounters helped to define boundaries. Males which had been fighting might separate to fly back to their respective territories and from thence conduct vehement song-duels—sometimes leaving their females to carry on the fight. Males would also break into song when sounds of strife between other pairs were heard. I have heard birds 150 yards apart answering each other with song, and probably the carrying power of the song to Marsh Tits is greater than this. This responsiveness on the part of males to each other's song appears to be comparable with Ruttledge's experience with the Irish Coal Tit (1946). He noted that the volume of song in that species was much dependent on birds of adjacent territories being close to one another. A Coal Tit whose territory was seldom invaded or which spent much time in the centre of its territory was seldom heard to sing.

The visiting of possible nest-sites, an activity which occupied much time from February to April, was frequently accompanied by song. The female especially seemed drawn to holes as to a magnet, and tended to ignore at times her territorial boundaries in order to visit hole-bearing shrubs. The male frequently accompanied her, singing loudly, perhaps anticipating or having an awareness of the likelihood of challenge from the neighbour over whose border they had ventured, or he might have been genuinely endeavouring to lay claim to this section which held the desirable holes. His song, however, often drew the neighbour's attention to the trespass, so that it rushed to the scene with answering song. The trespassers might then be temporarily intimidated and return to their own area, where the male would sing loudly again, or they might persist in their trespass, when a fight followed.

In the four years 1939-42, fifteen wandering males appeared in the study area during the months January to April. They sang while they travelled, although without territories. Such a wandering troubadour in February, 1939, sang loudly while being determinedly chased by the silent owner out of the territory.

Sometimes a paired male and female separated for a short while, and during the song-period the male tended to mount into the canopy and sing during her absence, ceasing when with a call-note she flew back to him. One male sang particularly energetic-

ally on the morning he obtained a new mate, perhaps because she was foraging on the border of his territory (Morley, 1950).

Sometimes a Great Tit will answer a Marsh Tit's singing with an imitation of the *chip* song. It is lower and more grating, quite distinct to human ears, but the Marsh Tit responds to it as if it were a rival of its own species. Very soft versions of the song, jumbled up with whispery and twittering notes to make a sort of sub-song, were occasionally heard from the vicinity of possible nest-sites.

THE *pitchou* NOTE.

The Marsh Tit's well-known *pitchou* note was, with a few exceptions given below, only heard called by birds which were territory-owners or striving to be so. The male undoubtedly called the note more often than the female, but unfortunately complete records were not kept on this point so that a table cannot be compiled to illustrate the fact. However, it may be worth noting that 18 males were recorded calling *pitchou* on 210 occasions, and 23 females on 114 occasions. Not only the number of occasions were more when the male called, but also the number of *pitchou* calls given at a time, especially from January to April. For example, a count on February 22nd, 1941, showed the male of a pair calling 35 times in 10 minutes, the female 4 times; and in a second count later that day, the male 16 times in 5 minutes, the female once.

As soon as a bird of either sex took on the status of territory-owner it uttered *pitchou*, though for months before as a landless flock bird it had never been heard to make this call. From June to August, with a peak in the last month, clashes occurred among the landless Marsh Tits in the *Parus-Sitta* flock (see page 281). On two occasions a landless bird was heard during such clashes to call an inward, scarcely audible *pitchou* when about 3 yards from the observer, so that perhaps it occurs more frequently in this "muttered" fashion than is apparent. A male which was unsuccessful in maintaining his recently acquired territory uttered the note in the same scarcely audible manner; and a female still living in the flock in March, 1942, was once heard, a week before she paired, to utter a small inward *pitchou* when coming to greet me as bait-giver. The owners were not in evidence at the time.

Territory-owners which had accompanied the flock outside their normal boundaries into the territories of neighbours did not utter *pitchou*. I tested this many times by means of bait. Owners would keenly follow me to their borders, which they were often hesitant to cross, and then would come silently and unobtrusively to me in the neighbours' ground. On returning to their own territories they would call *pitchou* loudly, as if in compensation for their former self-effacement, and this also happened if they had been forced to retreat by the owners. In one set of tests in

February, 1942, the pair were silent at 45 yards inside their neighbours' ground, but called *pitchou* when still 25 yards inside. In the same month and year a pair one morning wandered with the flock across a vacant area by their territory to the borders of another. They were accompanied by a landless subordinate female which had constantly attached herself to them since at least December 4th of the previous year, when she was ringed. This bird was always silent except for *sip* notes, but now, on this vacant area, she also gave *pitchou* calls to me. For the next 5 weeks she remained with the pair on their territory and I did not at any time hear her utter the note again. Then she paired with a neighbouring, recently bereaved male, and she called *pitchou* as a matter of course.

Both sexes called *pitchou* when spying neighbours trespassing. Sometimes they made no further attempt to drive off the intruders, the announcement of their presence being sufficient deterrent. Trespassing pairs were seen to turn quietly homewards when the owners called *pitchou* as much as 100 yards away. Sometimes, of course, the owners followed up vocal protest with more energetic action.

Thus, outside the song-period, the *pitchou* note was the chief means by which territory-owners made their claims known. Even in the song-period, *pitchou* might be used as an answer to another bird's singing, and a bird calling the note often stimulated all its neighbours to do so too. Males seeking to carve out territory in late winter and early spring occasionally travelled through the study area as noted in the section on song. They sometimes uttered *pitchou* notes as they moved along, and such calling caused all owners to respond likewise, giving the wanderer a map, as it were, of what land was occupied. The effect was mostly disheartening. The stranger would become silent and slip away. Here, *pitchou* has the same effect as song in Robins as described by Lack (1943) in inhibiting newcomers from attempting to establish territory on occupied ground.

The *pitchou* is also used between the pair as a signal note, and has connexions in this context with the gentler *pitsu*, much used as a contact note between the pair, and also in territorial skirmishes. Series of *pitchou* calls are the invariable accompaniment to the roosting of territory-owners, when the male especially utters a string of such calls. Like the Blue Tit as described by Colquhoun (1942), the male often accompanies his mate to her hole, and after she has slipped in he may also continue calling as he goes to his own roost. A female was once heard to utter *pitchou* apparently in answer to her mate from inside her roost hole. The evening chorus of *pitchou* from a wood or copse holding Marsh Tit territories is a regular and notable feature of the woodland sounds.

The note has also a sexual excitement significance, and the

long series of *pitchou* notes uttered by both sexes, but especially by males, in February and March, appears to be more sexual than aggressive. At this period, up to 40 calls in a string were noted, unbroken by any pause. Long sequences of the note were given as the pair moved about the hole-bearing shrubs during inspections of possible nest-sites. Bachelor males, whose actual inspections of holes were few (though they jealously guarded their situation) also gave long series of the note, often from the black-thorn scrub which does not produce holes, and which was a favourite shrub with the Marsh Tit outside the breeding-season. In April, random hole-visiting comes to an end with the building of the nest, and the peak of *pitchou*-calling is past. In May, the note chiefly occurs when the male visits the female at the nest.

The note is used by both sexes when other animals besides Marsh Tits intrude on the territory, such as dogs, foxes and human beings. It is perhaps difficult for us to realize that some birds may not feel fear when we invade their territories, but indignation, and therefore react with a threat or aggressive call.

The note was also used as a greeting call to me as bait-giver. This is understandable, because its basic "meaning" seems to be of an "I-am-here" nature.

KINDRED NOTES TO *pitchou*.

Allied to *pitchou* in sound and meaning is *pitchee*, *pitchee-chee-chee*. Another variant is *pitcher-cher-cher*, or sometimes just *cher-cher-cher* . . . , very like the scolding *cherr-cherr* of a Blue Tit. This note appeared to be used when the bird was somewhat doubtful as to where it stood in a relationship. For instance, a stuffed and mounted Marsh Tit kindly lent by Dr. W. S. Bullough was placed in the territories and sometimes drew this response from the owners. Its silence and lack of movement appeared to give them a feeling of uncertainty. The note was called during encounters with other and larger species, such as Great Tits or when Great Spotted Woodpeckers came close to the nesting hole. It was very occasionally recorded during territorial fights, and from both owner and trespasser on the boundary of the territory, and once a male uttered *pitchou* and this note after an excursion outside his territory. Both land-owners and landless birds uttered the note when newly confronted with the trap after being used to scattered bait, or called it on coming back to the trap after the nervous upset of being ringed. Occasionally it was uttered during sexual excitement at a hole, which seems to imply a different meaning from that given above.

A low-pitched, harsh threat-note, *ter-chow-chow* . . . , was uncommonly heard, and then only in the breeding-season. Its gruffness was unlike the usual notes of tits. It was also recorded from a pair resenting the presence of Blue Tits which were nesting 18 inches from them, in the same elder bush.

Loud, vehement single notes, such as *pitz*, *putz*, and *chou*, *su*, *tew*, sounding like one half of the *pitchou*, were freely uttered by territory-owners when with the flock or alone. These apparently serve as contact notes but are also used more aggressively when neighbours trespass, by birds in a territorial dispute, and by the pair when visiting the environs of holes. The shrill vehement *pitz* was sometimes identical in sound with the alarm (*q.v.*).

A harsh, nasal *ter-char-char-char* or *pit-char . . .*, an evident derivative of the *pitchou*, resembles the nasal *tchay* note of the Willow Tit but is fuller in tone. Its seasonal use is noted by Tucker in Witherby *et al.* (1938), and in my experience it is mainly sexual in character, much used when the pair are visiting nest-sites. But it does occur occasionally in aggressive contacts, given by both sexes. Sometimes the sight of a trespassing female neighbour appears to induce the mated male owner to call this note, instead of—as is more usual—attacking her, leaving his mate to carry on the fight. Curiously enough, the unmated male owners were not known to respond in this fashion to mated female trespassers. They attacked and drove them off with their mates. A mated male uttered the note when, in March, 1942, his mate postured at a Willow Tit, one of a pair feeding in dense bramble cover near where some bait was spread. It was occasionally uttered by the male when his mate drove a landless Marsh Tit at the bait. On November, 17th, 1940, the stuffed Marsh Tit was placed near the trap in a pair's territory. The female seemed afraid to go near it; the male uttered loudly a prolonged series of this note. When human beings approach the nest-hole in the breeding-season the pair may use this note or a *pitchou* verging near it. It was not usually called by solitary birds.

OTHER CALLS.

A common note which is used in territorial squabbles and by owners when driving flock birds at bait is a set of small, liquid song-notes resembling the triple-note song and sounded excitedly, *ter-tew-ti*, *tu-ti*, *tup-yup-tup*. I call this the battle-cry because I have only heard it in strife of some sort. It was once uttered by a male at a Blue Tit which was attracted by the former's nest-hole.

A distinct note which appears to be entirely confined to dominance chases of the owner against flock birds (at bait), and by flock birds among themselves during the summer chases alluded to above, is a high, tuncless, quiet and rapid *tit-it-it-it*, and resembles, but is softer than, a strife note of the Great Tit's. It was only called by the attacker. Occasionally a male uttered it against his mate when taking bait, a situation which sometimes caused him to assert dominance.

Common notes in sexual and aggressive excitement are high, thin, *tsip-sip*, *sip-ip* notes. Their spasmodic utterance is a typical feature of all territorial disputes, the matrix from which the more

striking and diversified calls arise. It was uttered by both owners and landless birds when they discovered a windfall of food, such as a spray of honeysuckle berries, and is probably merely a speeded-up version of the ordinary contact note, *sip*. It is interesting to note that the usual members of the *Parus-Sitta* flock, though of diverse species, have all a very similar contact note, including the Nuthatch.

When a bird seeking territory was defeated it sometimes fled from its opponent uttering a submission note, a high plaintive *chee*, uttered several times. Birds which had been defeated by an owner and which re-entered that territory (either on their own initiative or attracted back by means of bait) fled from the owner uttering this note. The submission note was apparently not made unless the caller had attempted to attain a state other than one of submission. True flock birds, landless and subordinate, were not recorded calling it. On rare occasions, an owner which had been driven off by a neighbour uttered it, but territory-owners did not usually show submission. They retired into their territories when beaten, where they became self-assertive immediately, the male frequently singing loudly if it was in the song-period, or both members of the pair uttering loud series of *pitchou* and explosive *chou* notes, etc. This demonstrated the value of territory in restoring self-confidence after a reverse. One territory-owner uttered the submission note after being handled for ringing purposes, and another uttered it while his mate was being ringed.

The Marsh Tit's strongest vocal fear note is a single vehement shrill *chit*, or *pitz*, or *pitz-its-its*, accompanied by a vertical dive into the undergrowth with closed wings, like a falling stone, where the bird "freezes" for some minutes. This strong fear-reaction was seen when Sparrow Hawks pounced on the tit-flock, and occasionally when a harmless Woodpigeon (*Columba palumbus*) flying overhead above the trees appeared to fill some inherent hawk-pattern in the Marsh Tit's mental make-up. They did not give this response to the alarming phenomenon of bomber aeroplanes roaring low over the wood.

Notes connected with "courtship feeding" and with coition have been described (Morley, 1949). A rare note, heard only from the female from the end of March to the normal close of the coition period, was a clear, finch-like *pip*, *pip*. It was associated with flight in sexual behaviour. The female's explosive hiss when frightened in the nest-hole is similar to that made by other members of the genus.

The youngest fledglings heard to call in the nest-hole were ten days old. Probably audibility to the human ear depends on the depth and size of the hole. Pullen (1945) records Blue Tit fledglings calling from the 9th day of life.

(3) AGGRESSION AND TERRITORIAL BEHAVIOUR.

TABLE 4 shows that aggressive contacts, as distinct from purely vocal disputes and involving physical action, are a feature of the Marsh Tit's life throughout the year. There is a marked increase in the number of aggressions apparently for social dominance in June, with a rapid falling away from the peak in August, until after September there are too few to list separately from those connected with territory.† September is a strikingly quiet month, the flock birds having settled down. The adult moult takes place between July and September, which possibly has a subduing effect on the behaviour of adults. These late summer months were also most difficult for the observer, the thick undergrowth of bracken

TABLE 4: INCIDENCE OF AGGRESSIONS IN HOURS OF OBSERVATION.* FIGURES IN BRACKETS, JUNE-AUGUST, INDICATE STRIFE AMONG LANDLESS BIRDS AND ARE INCLUDED IN THE MAIN TOTAL IN THE PRECEDING COLUMN.

Month	No. of hours	Aggressions	Adult ♀♀ share in aggressions
June	9	6 (1)=1 in 1.5 hrs.	2=1 in 4.5 hrs.
July	7.2	9 (6) .8	1 7.2
Aug.	9.75	15 (13) .65	6 1.6
Sept.	7	1 7	0 —
Oct.	22.5	10 2.25	6 3.75
Nov.	13	6 2.2	1 13
Dec.	12	4 3	2 6
Jan.	21.2	14 1.5	5 4.2
Feb.	40.3	21 1.9	12 3.4
March	44.5	28 1.4	13 3.4
April	34.6	21 1.6	12 2.9
May	37.25	3 12.4	2 18.6
Total	258.3	137	62

*Hours of observation excluding those spent on trapping, baiting experiments, flock counts, roosting and nesting behaviour.

and bramble having reached its densest, while one was miserably persecuted by noxious insects. October and November show a rise in aggressive contacts, and then comes another decline in December. The winters of 1939-42 were severe in Berkshire and it may be that this severity was connected with the temporary abeyance of such behaviour. Colquhoun (1942) found a decline in aggressiveness in Blue Tits in December.

The main cause of territorial disputes in the fall and early winter in West Wood was the trespassing of owners which accompanied the flock close to or over the boundaries of their

†Hinde noted that the first signs of aggressive behaviour among the juveniles occurred on the 8th day after fledging. The brood remained closely associated with their parents until the 16th day when they suddenly scattered. Some juveniles apparently established themselves temporarily in a limited area almost immediately, with accompanying aggressive behaviour. Further, many of the juveniles seemed to be in couples as though paired. One known juvenile which settled down in late June 700 yds. from its birthplace was apparently paired in August.

neighbours. I have induced territory-owners to trespass by means of bait, and fed both trespassers and owners together. On these occasions, the owners attacked the trespassing owners more fiercely than they did the landless birds (which indeed they frequently ignored even under these artificial conditions), and the trespassing owners were more timid in approaching, quicker to retreat and more easily rebuffed from coming to the bait at all. An attack on a landless flock bird had little real effect—it was always ready to try again. This hesitancy on the part of owners to cross or pass certain physical features, i.e., a boundary, shows an awareness of such a limit. Territory-owners were sometimes seen to leave the flock on their own initiative when it reached their borders without any proof of their neighbours' presence being given. At other times they were found crossing their boundary with the flock when the owners were not to be seen or heard, in a very subdued and quiet manner. (See also the section on songs and call-notes.)

As the breeding-season approached, the pairs became braver (or more forgetful of boundaries) and made treks to groups of hole-bearing shrubs such as elders outside their territories in their desire to visit holes. They thus came into frequent conflict with each other. Fights sometimes centred round some particular tree, elder or blackthorn patch, or they might extend up and down a considerable length of boundary, such as 80-90 yards. Mated males were also seen at this time of year deliberately invading neighbours' ground even when unaccompanied by their mates and thus without the excuse of hole-visiting. It was as if they almost sought the emotional storm which such an invasion provoked. From January, territorial fights were sometimes of long duration (i.e., 50 mins.), with intermittent pauses.

The last two columns of Table 4 show that the females take a lesser share in actual aggression than the males, though of course they are very vocal observers on the touch line, so to speak.

There were three times as many skirmishes in the first two weeks of April as in the last two weeks during the years 1939-42. By the third week of that month the pairs have settled down to their breeding holes and have given up indiscriminate visiting. May sees the lowest incidence of aggression, each pair being mostly confined to the vicinity of the nest hole and with no fresh intrusions from strange birds.

A territorial dispute among Marsh Tits is often heralded by an outburst of calling, as the first bird of an owning pair which spies trespassers utters loud and vehement *putz*, *pitchou* or emphatic *pitsu* notes, to which its mate pays immediate attention. Both continue to call vigorously and hurry to the scene. The trespassers usually call likewise, and both pairs may after this vocal display make a mutual retreat towards the centres of their respective territories, and such a mutual retreat is a common finale

to a more active dispute. Either male or female may initiate such a withdrawal, as either may begin the attack.

Trespass, however, may draw forth a more definite protest from the owners, and this is especially so from January onwards. A superficial view of Marsh Tits in such disputes would not show any remarkable postures, nor has the species any bright or contrasting plumage patterns to make such occasions conspicuous. All to be seen are small brown-buff birds with black caps gyrating round each other and uttering shrill excited notes. There are few postures, but after some practice the human eye becomes able to detect such, for they are usually rapidly performed and relaxed. It is rare to see an actual peck made, but these do occur in the bitter encounters, the birds sometimes locking claws and jabbing at each other with their bills.

The display actions were recorded for every month of the year except May and were used by both sexes. The display usually appeared undirected and seemed more an outlet for the extreme emotional excitement of the bird. Postures were also seen used in disputes with Great Tit, Blue Tit, Willow Tit, Robin and human beings. Much variation and combination of the patterns took place, but these could be approximately separated into types as follows:—

1. Head bent down, showing black crown; sometimes performed alone, sometimes combined with drooping wings which might or might not be twitched (a common general excitement action), and tail fanned; sometimes combined with 3 and 7. The posture appeared undirected to any object, but a female which was attacking a Willow Tit in the undergrowth below her swung forward and downward on her perch, thus directing the black crown to the bird below. The posture was also seen performed by flock birds in aggressions in late summer. It is interesting to note that Tucker (1935) thought the crown feathers of the Marsh Tit were probably undergoing modification from a dark brown, dully-surfaced condition to a black glossy one and thus a more showy one. Such a modification would enhance the conspicuousness of the action.

2. Head jerked up, showing the black tab under the lower mandible; may follow immediately on 1. Sometimes made while crouching, wings fluttered in same position as that for solicitation. One male with drooped wings, fanned tail and all body feathers fluffed (see 6) made this posture while holding an elderberry between the mandibles, following this up with an attack on a cluster of elderberries (see 18) which his opponent copied. The head may be jerked from side to side with the bill pointing up. Another bird held a piece of nut in the beak and united this posture with 4.

3. Head-feathers raised, and once also puffing out of whitish cheek-feathers.

4. Black tab under lower mandible puffed out.
5. Shoulder- and neck-feathers puffed, so that the black crown appears surrounded by a buff-brown shield. Performed by a female when a Blue Tit perched near her nest-hole.
6. Fluffing out of body-feathers so that bird appears as a feathery ball. Also combined with 3.
7. Fluffing out of flank feathers only, to form a lacy fringe or flange along the body edge. Wings may be twitched and slightly drooped or, a rare action with this species, waved. Stance either erect or crouching. Also combined with 1 and 2.
8. Erection of rump-feathers, with tail bent down and fanned, wings drooped and sometimes fluttered, and sometimes 1. This posture, common to other species, is not connected with any conspicuous colour of the rump in the Marsh Tit, but is not an infrequent one.
9. Elongation of the body and compression of the feathers to give the bird a thin stretched appearance; the beak is sometimes pointed at the opponent. Sometimes combined with 1, 2, 6 and 10.
10. A simple posture common to other species. Tail cocked up, wings slightly drooped, sometimes twitched. Sometimes bird crouching but usually legs are stretched so that the bird appears taller than normal.
11. Tail fanned, wings slightly drooped. Commonly combined with other postures such as 1, 2, 3 and 4.
12. Slow waving of wings or of one wing; once seen combined with 6 and 16. One male doing this wafted himself on the down-stroke towards his opponent.
13. Full downward extension of one wing, while perched.
14. Display-flight during fights, wings widely spread and acting like a parachute so that the bird sails through the air somewhat slowly for a short distance, perhaps 5 yards, often losing height. A singing owner made this flight while uttering the *yu-yu-yu* phrase before a fight on February 25th, 1940. Short, rapid, darting but normal flights from the bird's perch to the ground and back again were seen during fights, as if the bird felt the extreme necessity of motion, but these had no distinctive character to classify them as display.
15. A loud, single flirt or vibration of the wings in flight close to the opponent, as the ribs of a fan might be rattled. This action appears to have an advertisement value as well as an intimidatory one. It has also been performed at me when slow in producing bait; to a Robin eating bait and preventing other birds from approaching; and by a female to her mate in sexual excitement.
16. Hanging upside down from a perch, wings opened and waved or fluttered, tail fanned. A somewhat rare display. It was also done once by a male when his mate was caught at the nest-hole for ringing. A bachelor male who had lost all his tail-feathers also performed it, looking most strange.

17. Falling about among branches as if disabled. This was more strikingly and frequently observed in the Great Tit, but was occasional in the Marsh Tit.

18. Energetic, sometimes violent, pecking and tearing of buds, bark, mosses and lichens, twigs, etc. A common action of excitement occurring also in purely sexual contexts. Two contesting males once seized and hammered in turn a white moth on an oak branch.

19. Wiping the bill on a branch, an excitement action common to many species.

TABLE 5: MODE OF ACQUISITION OF 13 STABLE TERRITORIES.

Month	(a) Occupation of vacant territory	(b) Pairing with widow	Total
July	1	1	2
August	—	1	1
September	1	—	1
October	1	1	2
February	2	1	3
April	2	2	4
Total	7	6	13

Table 5 shows the mode and month of acquirement of 13 stable territories. In addition, 6 ephemeral territories were carved out from the fringes of established ones, by strange males and ringed landless birds living with the flocks. These attempts were made in October (1), November (1), February (3) and March (1). Females were only known to acquire territory by pairing with owning or claiming males. They did not claim vacant ground on their own, nor, if bereaved, were they seen to defend the territory as bereaved males did. The histories of the territories and the movements of their owners within them are discussed in Southern and Morley (1950).

TABLE 6: LENGTH OF TIME THAT 11 TERRITORIES WERE EITHER (a) LEFT VACANT OR (b) WITH WIDOWS UNMATED.

(a)		(b)	
Months	No. of days	Months	No. of days
April-October ...	198	part April ...	26*
June-September ...	77	May-August ...	78
January-April ...	90	September-October ...	35
November-February .	53	January-February ...	32*
January-February ...	32	May-July ...	45
April-April ...	340		

*Observer absent and upon return found one male replaced by another.

Table 6 shows the length of time 11 territories remained unoccupied by a male bird. There is some indication that territories with widows procure male owners more speedily than those com-

pletely vacant. The figures represent a maximum, being computed from the date when the last owner was seen to when the next owner was recorded, but even so are in contrast to the speedy expansion by neighbours into an empty territory recorded by Lack (1943) for the Robin. Neighbours were not seen crossing the borders into vacant territories for about 2-3 weeks, and when eventually a claimant appeared they reverted to their former boundaries, so that these remained remarkably constant as the maps in Southern and Morley (1950) show.

Baiting experiments showed that a fairly narrow band of no-man's-land (as narrow as 20 yards) lay between territories, but from the evidence of fights between pairs it was sometimes found that an even sharper demarcation obtained, for the opposite branches of an oak tree might be in two different territories, and a small pond about 10 ft. across was halved between two owners for part of 1941.

I would like to relate here a territorial incident of some interest. A very tame mated male damaged his wing in the drop trap on January 7th, 1941, and lost the power of proper flight. A week after the accident I noticed that he was very upset by the presence of a landless flock bird—a male—in his territory with the flock, and did his best to drive him away. Five days later, on January 19th, the landless male was again present in the territory and now called *pitchou* upon seeing me, indicating that he was no longer in the subordinate position of a flock bird. He was, moreover, tending to associate with the owning female and was dominant over her at the bait. The presence of bait drew the two males into proximity and a fight developed in which both postured. The owner was silent, the challenger was noisily calling the "battle-cry" notes. At last the injured owner seemed almost to refuse combat, lurking in the oak branches while the challenger came down to the bait unmolested. After some minutes, however, the owner worked his way up to a higher level in the oaks and planed down on to his opponent below. The combat was so fierce that they locked claws and jabbed at each other on the ground in the snow. At this point a Jay (*Garrulus glandarius*) suddenly swooped down from the bushes towards the birds on the ground. I stepped forward (I was a few feet from the Marsh Tits), waved my arms and shouted, and the Jay swerved aside, missing the tits by a few inches. They immediately separated in fright, the owner fluttering to some thick scrub where he uttered a long series of *pitchou* notes with crown-feathers raised. The challenger after a thoughtful minute or two hopped back to the bait on the ground. Curiously enough, the female now attacked him and he retreated from her. The position of dominance which he had held over her was in some way reversed by the incident of the Jay. The pair then attacked him together, the female continuing her attacks to the borders of the territory while her injured mate remained behind

to sing. The challenger had now begun to utter the plaintive submission note (p.280).

The female disappeared and was replaced by another on February 8th which had been ringed the previous November as a bird in the flock in her future mate's territory. Meanwhile the expelled challenger was now haunting a small section of birch scrub on the border of the territory. There he gave territorial reactions when I lured his neighbours into his area by bait, and behaved like a trespassing owner when I lured him out of his area; but he did not sing, and appeared to call *pitchou* only when there was no neighbour very close at hand. Such vocal inconspicuousness would indicate a lack of confidence in his position.

From February 28th a presumed female was accompanying him, subordinate to him at bait. He ventured a little song, not very loud. But he was alone again on March 8th and meanwhile his hold on his area weakened; when none of his neighbours were near he called *pitchou*; when they were, he was silent and submerged into the flock unattacked. He was last recorded on March 16th, when a neighbour was attracted into his area by bait. This male was most vindictive against him, although himself the invader, and the owner submitted to the attacks, uttering the submission note.

(To be concluded in the September number.)

REPORT ON BIRD-RINGING FOR 1952.*

BY

SIR A. LANDSBOROUGH THOMSON, C.B., D.Sc., *Chairman*,
AND E. P. LEACH, *Hon. Secretary*,
Bird-Ringing Committee, British Trust for Ornithology.

This is the sixteenth report† issued on behalf of the Committee, continuing the earlier sequence under the title "The *British Birds* Marking Scheme." It combines a report on the progress of ringing during 1952, with a selected list of recent recovery records.

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 Honorary Secretary of the Committee has continued to carry out the work of running the scheme, and has had the whole-time assistance of Miss Diana Syms throughout the period. The constitution of the Committee remains unchanged.

* A publication of the British Trust for Ornithology.

† The last preceding report was published in *Brit. Birds*, vol. xlv, pp. 265-277, 341-357.

FINANCE.

The provision of assistance in the headquarters work has been made possible by a grant from the Nature Conservancy; and the British Trust for Ornithology has from its main funds contributed £100 towards running expenses. Otherwise the expenditure is met mainly from payments for rings issued. The accounts for 1951 and 1952 are being published in the annual report of the Trust.

PROGRESS OF RINGING.

The total number of birds ringed was 96,326—again a new record. Of these, 56,867 were trapped and 39,459 were ringed as chicks (see Table I).

The names of ringers are listed alphabetically in Table II. Individual totals of birds ringed exceeded 1,000 in 23 cases. The Bird Observatories figured prominently, Skokholm heading the whole list with a total of 4,910. Large quantities of rings were again issued through the Wildfowl Inquiry Committee and the Severn Wildfowl Trust.

Numbers of each species ringed are given in Table III. The highest total for any species was 8,870 for the Starling; Blackbird and Blue Tit came next. Major-General Wainwright's large total included 21 Little Grebes and 14 Green Sandpipers. Commander Hughes Onslow ringed 20 Short-eared Owls. The Northumberland and Durham N.H.S. was responsible for ringing 101 Coal Tits—nearly half the total for the species in the year. Several species were ringed in 1952 for the first time under the scheme:—Grey Phalarope (Cley B.O.), Glaucous Gull (Fair Isle B.O.), Pectoral Sandpiper (L.N.H.S., and General Wainwright), American Robin (Lundy B.O.), Lesser Grey Shrike (Monks' House B.O.), Short-toed Lark (Skokholm B.O.) and Velvet Scoter (R. E. Wood).

PUBLICATIONS.

Progress has been made in analysing the data so far obtained for certain species, and the following report has been published:—

- A. Landsborough Thomson (1953). "The migrations of British auks (*Alcidæ*) as shown by the results of ringing." *Brit. Birds*, vol. xlv, pp. 3-16.

The following publication is also relevant:—

- E. P. Leach (1952). "British recoveries of birds ringed abroad." *Brit. Birds*, vol. xlv, pp. 458-465.

SELECTED LIST OF RECOVERIES.

The following list is necessarily restricted to records of individual interest, excluding many which will be of value for subsequent analysis. (In some cases the records have been summarised rather than listed in detail). It has fortunately been possible to incorporate another large batch of records from the U.S.S.R.

Table I.

NUMBER OF BIRDS RINGED.

					<i>Trapped</i>	<i>Nestlings</i>	<i>Total</i>
In 1952	...	...	...	...	56,867	39,459	96,326
„ 1951	...	...	...	...	49,364	36,379	85,743
„ 1950	...	...	...	...	42,112	33,994	76,106
„ 1949	...	...	...	...	27,496	29,965	57,461
„ 1948	...	...	...	...	18,413	20,911	39,324
„ 1947	...	...	...	...	14,574	14,007	28,581
„ 1946	...	...	...	...	8,909	8,412	17,321
„ 1945	...	...	...	...	1,875	5,419	7,294

Grand Total (including arrears) 1,137,073.

Table II.

NAMES OF THOSE RETURNING 100 AND OVER.

S. M. D. Alexander	L. A. Cowcill	V. Huddleston
J. W. Allen	Cowin, Crellin, Moss & Pool	A. G. Hurrell
D. R. Anderson	J. B. C. Crompton	Huyton & Low
D. G. Andrew	A. Cross	J. B. James
J. F. Anton	R. W. Crowe	A. H. Johnson
G. A. & M. A. Arnold	A. Darlington	G. H. Kay
R. W. Arthur	H. Davies	J. E. King and Edin- burgh Academy
Ash & Ridley	Davis & Iles	J. M. B. King
B. Astin	W. M. Dean	Kinnear & Flower
H. E. Axell	R. F. Dickens	John Lees
R. H. Baillie	Dublin Field Club	Leics. & Rutland Orn. Society
Balch & Castle	Dungness Bird Obs.	Leighton Park School
I. V. Balfour-Paul	Edward Grey Institute	Miss Levy
R. M. Band	W. J. Eggeling	R. M. Lockley
J. Bartholomew	R. Elmes	London N.H.S.
Bedford School	Fair Isle Bird Obs.	J. W. Lund
J. A. Bennington	J. Field	Lundy Bird Obs.
Bilby & Taylor	P. V. Le Neve Foster	A. E. Male
A. E. Billett	Miss Garden	J. E. Marson
J. J. Boon	Gibraltar Point Bird Obs.	Isle of May Bird Obs.
Bootham School	A. W. Goodin	Midlothian Orn. Club
G. A. Bowden	F. G. Grey	J. D. Mills
J. W. Brennan	F. C. Gribble	Monks' House Bird Obs.
F. J. Brown	J. Grierson	G. Mountfort
I. G. Brown	J. M. Gunn	C. K. Mylne
R. H. Brown	F. M. Gurteen	J. A. Nelder
Bryanston School	Halifax Sci. Soc.	Nelson & Lecdal
P. S. Burns	Hamilton & Macgregor	Norfolk Nat. Trust
Cambridge Bird Club	D. F. Harle	Northumberland & Durham N.H.S.
B. Campbell	Miss Haydock	Oundle School
P. J. Chadwick	P. W. Hinde	Oxford Orn. Society
R. Chislett	C. Hodgkinson	H. Pease
P. R. Clarke	K. Holdsworth	R. Perry
Clayesmore School	Holmes, Hutton & Chippendale	R. H. Poulding
F. B. Clemson	E. G. Holt	L. A. Pownall
Cley Bird Obs.	W. Howe	
E. Cohen	B. J. Huddart	
G. B. Corbet		
D. G. Cotgrave		
J. C. Coulson		

W. T. C. Rankin &
 Birkenhead School
 P. S. Redman
 J. Reynolds
 P. V. Robinson
 R. W. Robson
 K. B. Rooke
 St. Edmund's School
 Saltee Bird Obs.
 Sedbergh School
 Severn Wildfowl Trust
 Miss Shaddick
 Shrewsbury School
 Skokholm Bird Obs.
 R. G. Smith

Smith & Walker
 J. Southern
 R. Spencer
 Spurn Bird Obs.
 J. Stafford
 I. F. Stewart
 Lord David Stuart
 D. Summers-Smith
 Thearle, Hobbs &
 Goring
 J. F. Thomas
 H. A. Thompson
 Uppingham School
 Mrs. P. V. Upton

H. Van den Bos
 C. B. Wainwright
 J. W. Wainwright
 I. Walker
 A. Wallis
 E. L. E. Watkiss
 Watts & McConville
 L. G. Weller
 Wharfedale Nat. Soc.
 A. C. Whiteside
 Wildfowl Inq. Ctee.
 R. G. Williams
 D. R. Wilson
 Winchester College

Table III..

NUMBER OF EACH SPECIES RINGED.

	1952			<i>Grand Total</i>		
	<i>Trapped</i>	<i>Nestlings</i>	<i>Total</i>			
Manx Shearwater	2,832	644	3,476	45,962
Fulmar	60	102	162	1,489
Gannet	112	420	532	13,597
Cormorant	—	189	189	3,414
Shag	71	265	336	3,042
Heron	3	161	164	2,793
Mallard	1,350	88	1,438	10,811
Teal	1,743	7	1,750	11,945
Wigeon	49	—	49	873
Tufted Duck	45	—	45	472
Grey Lag Goose	3	—	3	54
White-fronted Goose	49	—	49	165
Pink-footed Goose	509	—	509	1,182
Buzzard	1	41	42	658
Sparrow Hawk	18	21	39	1,098
Kestrel	6	113	119	1,566
Moorhen	169	28	197	2,858
Coot	139	—	139	470
Oystercatcher	29	310	339	3,578
Lapwing	159	2,193	2,352	51,091
Ringed Plover	32	151	183	2,496
Snipe	52	46	98	2,175
Curlew	16	331	347	4,566
Common Sandpiper	262	88	350	1,970
Redshank	22	160	182	3,322
Dunlin	40	14	54	270
Great Black-backed Gull...	8	105	113	1,118
Lesser Black-backed Gull	20	525	545	15,749
Herring Gull	123	1,201	1,324	16,346
Common Gull	18	103	121	3,459
Black-headed Gull	92	3,265	3,357	26,125
Kittiwake	76	752	828	4,645
Common Tern	19	697	716	23,744
Arctic Tern	21	1,160	1,181	7,194
Roseate Tern	—	384	384	1,828
Little Tern	2	13	15	1,201
Sandwich Tern	—	1,121	1,121	23,988
]	150	243	393	7,729

	1952--		Grand Total
	Trapped	Nestlings	
Guillemot	120	241	4,927
Puffin	321	39	8,015
Stock Dove	7	100	1,390
Woodpigeon	22	249	5,360
Turtle Dove	15	32	904
Cuckoo	35	58	1,274
Barn Owl	7	50	984
Little Owl	30	51	1,156
Tawny Owl	8	123	1,790
Swift	50	75	2,168
Green Woodpecker	6	14	239
Great Spotted Woodpecker	30	12	319
Woodlark	3	40	233
Skylark	167	224	5,035
Swallow	277	2,820	59,300
House Martin	166	63	5,501
Sand Martin	213	34	6,162
Raven	—	65	513
Carrion Crow	54	81	2,612
Rook	86	148	6,278
Jackdaw	237	295	6,305
Magpie	31	93	2,190
Jay	37	29	1,001
Great Tit	2,189	775	18,669
Blue Tit	5,135	1,051	35,610
Coal Tit	236	224	2,255
Wren	490	89	5,687
Dipper	6	106	2,471
Mistle Thrush	67	252	6,622
Fieldfare	55	—	266
Song Thrush	1,263	1,966	83,496
Redwing	352	—	1,732
Blackbird	4,216	3,014	89,922
Wheatear	413	615	5,041
Stonechat	37	59	1,399
Whinchat	98	206	2,660
Redstart	317	534	4,899
Nightingale	19	80	2,797
Robin	2,881	777	41,177
Reed Warbler	27	186	1,722
Sedge Warbler	317	187	2,865
Blackcap	98	98	1,785
Garden Warbler	83	30	1,940
Whitethroat	1,647	490	11,272
Lesser Whitethroat	70	11	935
Willow Warbler	2,109	831	21,352
Chiffchaff	546	97	2,526
Wood Warbler	7	83	1,634
Spotted Flycatcher	187	585	6,366
Pied Flycatcher	227	699	5,830
Duncock	1,723	595	23,434
Meadow Pipit	846	463	9,570
Tree Pipit	29	122	2,595
→ Rock Pipit... ..	384	88	2,129
→ Pied Wagtail	551	542	10,115
Grey Wagtail	11	127	1,467
→ Yellow Wagtail	357	191	2,363

	1952		Grand Total
	Trapped Nestlings	Total	
Red-backed Shrike	9	63	72
Starling	8,230	640	8,870
Greenfinch	1,993	681	2,674
Goldfinch	37	80	117
Linnet	939	851	1,790
Twite	108	17	125
Bullfinch	54	77	131
Chaffinch	1,905	732	2,637
Brambling	83	—	83
Yellowhammer	231	328	559
Reed Bunting	408	236	644
House Sparrow	4,664	173	4,837
Tree Sparrow	63	77	140

NUMBERS RINGED IN 1952 OF SPECIES NOT SHOWN IN THE TABLE.

(The figures in brackets show the Grand Total).

Great Crested Grebe 1 (19), Little Grebe 22 (57), Storm Petrel 102 (1,410), Garganey 14 (28), Gadwall 10 (57), Pintail 31 (274), Shoveler 25 (161), Red-crested Pochard 6 (7), Pochard 8 (77), Velvet Scoter 1, Common Scoter 2 (7), Eider 1 (917), Red-breasted Merganser 1 (9), Sheld Duck 3 (530), Hen Harrier 11 (147), Montagu's Harrier 13 (152), Hobby 1 (45), Peregrine 7 (138), Merlin 25 (412), Water Rail 22 (98), Spotted Crake 1 (4), Corncrake 34 (662), Little Ringed Plover 13 (51), Golden Plover 23 (434), Turnstone 12 (40), Jack Snipe 2 (7), Woodcock 17 (5,528), Green Sandpiper 14 (29), Wood Sandpiper 7 (12), Greenshank 6 (25), Knot 3 (9), Purple Sandpiper 2 (4), Little Stint 2 (3), Pectoral Sandpiper 2, Ruff 6 (13), Grey Phalarope 1, Stone Curlew 11 (302), Arctic Skua 45 (209), Great Skua 21 (881), Glaucous Gull 2, Little Auk 1 (6), Black Guillemot 19 (228), Long-eared Owl 15 (359), Short-eared Owl 31 (209), Nightjar 24 (326), Kingfisher 16 (828), Hoopoe 1 (2), Wryneck 10 (387), Short-toed Lark 1, Hooded Crow 8 (180), Chough 16 (127), Marsh Tit 76 (723), Willow Tit 5 (82), Long-tailed Tit 45 (286), Bearded Tit 1 (43), Nuthatch 129 (1,143), Treecreeper 85 (875), Ring Ouzel 47 (854), American Robin 1, Black Redstart 21 (208), Bluethroat 5 (26), Grasshopper Warbler 25 (195), Marsh Warbler 1 (39), Icterine Warbler 1 (23), Barred Warbler 7 (26), Dartford Warbler 6 (40), Yellow-browed Warbler 3 (23), Goldcrest 178 (1,183), Firecrest 5 (7), Red-breasted Flycatcher 2 (28), Water Pipit 1 (3), White Wagtail 12 (156), Blue-headed Wagtail 4, Great Grey Shrike 5 (16), Lesser Grey Shrike 1, Woodchat Shrike 1 (4), Hawfinch 6 (135), Siskin 2 (28), Lesser Redpoll 30 (744), Mealy Redpoll 1 (15), Scarlet Grosbeak 1 (6), Corn Bunting 44 (199), Cirl Bunting 4 (115), Lapland Bunting 2 (4), Snow Bunting 3 (174).

Little Grebe (*Podiceps ruficollis*).

No.	Ringed.	Recovered.
351468	Colchester (Essex), 15.8.52, ad., by C. B. Wainwright.	Near Maldon (Essex), 4.12.52 [13 m. S.W.].

Storm Petrel (*Hydrobates pelagicus*).

SS.474	Skokholm Bird. Obs., 16.6.49, ad.	10 m. N. of Land's End (Cornwall), 18.6.52.
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Manx Shearwater (*Puffinus puffinus*).

There are numerous further records, mostly of birds ringed as adults on Skokholm, from the west coast of France. The following list includes the first two records from the west coast of the Iberian



BAIRD'S SANDPIPER (*Calidris bairdii*). AT THE WICKS, KENT AND SUSSEX, SEPTEMBER 21ST, 1952.

(Photographed by G. DES FORGES).

In these plates the "scaled" appearance of the upper-parts and the pure whiteness of much of the under-parts show clearly, as do the pale eye-stripes meeting to form a whitish patch above the bill corresponding with the white of the chin and throat, but the breast-markings are not very distinct. (see page 304).



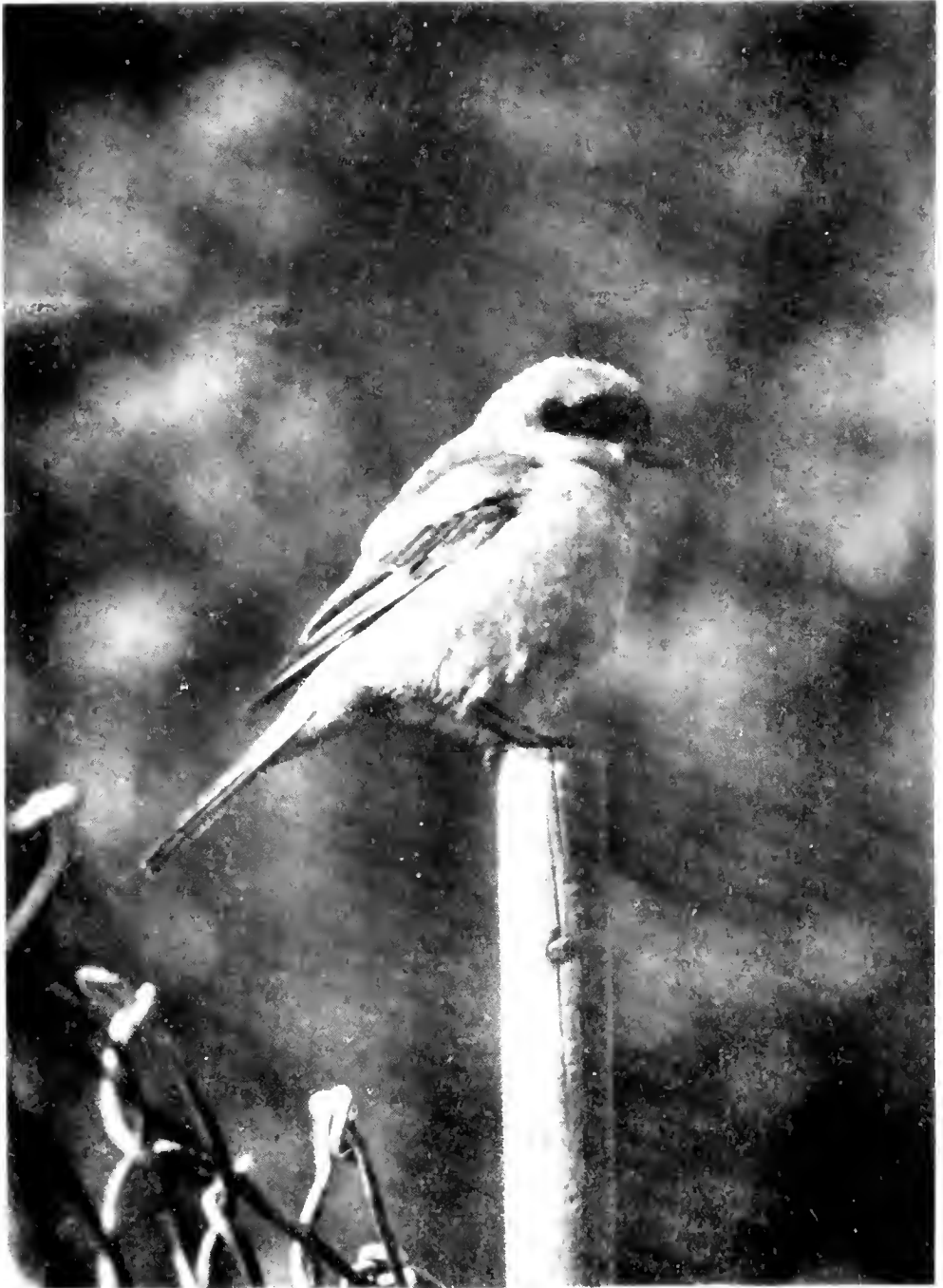
BAIRD'S SANDPIPER (*Calidris bairdii*). AT THE WICKS, KENT AND SUSSEX, SEPTEMBER 21ST, 1952.
(Photographed by G. DIES FORGES).

In this plate the form of the eye-stripes that gave the bird a "capped" appearance is better shown. Note that here the culmen appears almost perfectly straight and compare this with the impression given by the bill in plate 46. The wings extend beyond the tail.



BAIRD'S SANDPIPER (*Calidris bairdi*). AT THE WICKS, KENT AND SUSSEX, SEPTEMBER 21ST, 1952.
(Photographed by G. DES FORGES).

Here the bill seems to be slightly decurved, an impression that was given at certain angles (compare with plate 45). The "scaly" pattern of the back and mantle is best shown in this plate.



WOODCHAT SHRIKE (*Lanius sculator*). RICHMOND PARK, LONDON,
MAY 3RD, 1953.

(Photographed by B. A. MAESTI).

This bird appeared to be in somewhat worn immature plumage and the scapular-patches, rump and under-parts were greyish rather than white or cream. Thus the effect in the photograph is a true one and is not merely a result of the breast being in shadow. (see page 305).

Peninsula and the first from the Mediterranean; also a second record from South America, following the one from Brazil reported last year.

		RINGED AS YOUNG.			
No.	Ringed.			Recovered.	
02224	Skokholm	Bird Obs.,	28.8.48.	Machrihanish	(Argyll),
				31.7.52.	
AV.1685	Ditto,	29.9.47.		Lundy Bird Obs.,	17.5.52.
		RINGED AS FULL-GROWN.			
02250	Skokholm	Bird Obs.,	28.8.48.	Old Head of Kinsale	(Cork), 3.5.52.
AT.14169	Scilly Is.,	12.7.52, by Watts and		Pontevedra, Spain,	16.9.52.
		McConville.			
AX.7655	Skokholm	Bird Obs.,	10.7.52.	Off Nazaré, Portugal,	
				-.11.52 [39° 35' N.,	
				9° 5' W.].	
AX.7767	Lundy	Bird Obs.,	-.6.51.	Grau du Roi (Gard),	
				France, 11.2.53.	
AT.8306	Skokholm	Bird Obs.,	19.7.47.	Cabo San Antonio, Argentine	Republic, 19.10.52
				[ca. 36° 35' S. 56° 50'	W.].

Fulmar (*Fulmarus glacialis*).

AE.5669	Rosemarkie (Ross),	1.8.52, young,		Frederikshaven (Jutland),	
	by J. Lees.			Denmark, 14.10.52.	
309549	Isle of May	Bird Obs.,	21.6.52.	Barents Sea, 4.12.52 [73°	
				20' N., 47° E.].	

Gannet (*Sula bassana*).

		RINGED AS YOUNG.			
507796	Bass Rock,	15.7.51, by I. V.		Near Ostend, Belgium,	
	Balfour-Paul.			-.9.52.	
507827	Ditto,	15.7.51.		Holwerd (Friesland),	
				Holland, -.10.52.	
501557	Ditto,	11.7.49, by Midlothian		Walcheren (Zeeland),	
	Orn. Club.			Holland, 29.9.52.	
503859	Grassholm (Pembs.),	8.7.46, by		C. Ghir, Western Morocco,	
	Skokholm Bird Obs.			spring, 1952.	
510046	Ditto,	10.9.52, by R. M. Lockley.		Off S.W. Morocco, 11.11.52	
				[28° 52' N., 10° 51' W.].	
506572	Ailsa Craig,	23.7.50, by F. D. E.		Off coast of Mauretania,	
	Walls.			W. Africa, 22.8.52	
				[19° N.].	
<i>Jersey</i>					
F.204	Les Etacs, Alderney,	20.6.49, by		Færder, Oslo Fjord, Nor-	
	Soc. Jersiaise.			way, -.12.50.	

		RINGED AS FULL-GROWN.			
503794	Grassholm,	3.7.47, by Skokholm		Terschelling, W. Frisian	
	Bird Obs.			Is., Holland, 18.12.52.	
505800	Ditto,	23.5.52.		Bloemendaal, N. Holland,	
				29.1.53.	

There are also 4 records of Bass Rock birds from W. France, and 2 records of Alderney birds—one from W. France and the other from Portugal.

Cormorant (*Phalacrocorax carbo*).

Of birds ringed as young, 16 have been recovered at various distances within Great Britain, showing a general southerly trend, 3 in France and 5 in Northern Spain.

Shag (*Phalacrocorax aristotelis*).

RINGED AS YOUNG.

No.	Ringed.	Recovered.
127444	Summer Isles (Ross), 17.7.52, by J. Fisher.	Lochboisdale, S. Uist, 19.11.52 [90 m. S.W.].
509093	Bass Rock, 6.7.52, by J. E. King and Edin. Academy Orn. Soc.	Castle Donington (Leics.), 26.2.53 [230 m. S.].
508569	Farne Is., 26.6.52, by Northd. & Durham N.H.S.	Lybster (Caithness), 10.4.53 [190 m. N.].
508587	Ditto, 17.7.52.	Long Melford (Suffolk), 12.3.53 [260 m. S.].
508574	Ditto, 26.6.52.	Morden (Surrey), 17.2.53. [300 m. S.].
508564	Ditto, 26.6.52.	Merkelbeek (Limburg), Holland, 21.2.53 [50° 57' N., 5° 57' E.].
508875	Lundy Bird Obs., 23.6.52.	Crosshaven (Cork), 16.8.52.
128468	Lambay I. (Dublin), 29.6.52, by J. F. Simms.	Near Hook Point (Wexford), -.11.52 [105 m. S.S.W.].
127069	Saltee Bird Obs., (Wexford), 13.8.52.	Skerris (Dublin), 18.11.52 [100 m. N.].
127076	Ditto, 13.8.52.	Cork Harbour, 18.11.52 [80 m. W.].

There are also 6 records of Lundy Island birds from Brittany.

Heron (*Ardea cinerea*).

There are 24 records of birds ringed as nestlings and recovered within distances of up to 80 miles ; and one other in which the bird had travelled 130 miles westwards within Ireland.

Mallard (*Anas platyrhyncha*).

RINGED AS FULL-GROWN.

925863	Colchester (Essex), 4.12.50.	R. Yug, Vologda Prov.' Russia, 18.6.51 [60° 30' N., 46° 35' E.].
927714	Slimbridge (Glos.), 24.1.50.	Lake Ladoga, Finnish-Karelo Repub., 29.4.50.
927426	Colchester, 7. 1. 51.	Novgorod Prov., W. Russia, 23.4.51 [57° 55' N., 32° 25' E.].
927480	Ditto, 15.3.51.	Gdov. Dist., Pskov Prov., W. Russia, 17.4.51 [58° 45' N., 27° 48' E.].
925912	Ditto, 22.12.50.	Ditto, 19.8.51.
928320	Slimbridge, 12.9.50.	Lutsk, Volynsk Prov. S.W. Russia, -.3.51 [51° 7' N., 25° 37' E.].

No.	Ringed.	Recovered.
<i>Witherby</i> 403841	Ditto, 24.9.49.	Libau, Latvia, 28.9.50 [56° 25' N., 21° E.].
925875	Colchester, 19.12.50.	Heinola, S. Finland, 24.8.52 [61° 20' N. 26° 10' E.].
927439	Ditto, 28.2.51.	Sysmä, S.W. Finland, 3.5.52 [61° 30' N., 25° 40' E.].
928641	Slimbridge, 23.9.50.	Kauvatsa, S.W. Finland, 20.8.52 [61° 23' N. 22° 32' E.].
929354	Ditto, 20.10.51.	Fryksände (Värmland), Sweden, 2.11.52 [60° 9' N., 13° 1' E.].
<i>Witherby</i> 403721	Ditto, 6.8.49.	Near Skövde (Västergöt- land), Sweden, -.10.51.
927399	Colechester 29.10.50.	Bolmen Sjö (Småland), Sweden, 24.8.52 [56° 50' N., 13° 40' E.].
926521	Slimbridge, 26.12.48.	Heinrichswalde [formerly E. Prussia], 9.11.51 [55° 3' N., 21° 42' E.].
AN.3503	Blagdon (Som.), 21.7.50, by R. H. Poulding.	Peenemünde (Pomerania), Germany, 19.8.51.
928221	Slimbridge, 11.9.50.	I. of Föhr, N. Frisian Is., Germany, 17.8.52.
928387	Ditto, 13.9.50.	Near Plön (Schleswig- Holstein), Germany, 12.8.52.
927475	Colchester, 15.3.51.	Near Jever (Oldenburg) Germany 10.9.52.
927425	Ditto, 7.1.51.	Roskilde Fjord (Zealand), Denmark, 21.12.52.
927333	Ditto, 25.9.50.	Odense Fjord (Fyen), Den- mark, 4.9.52.

Other records include 7 from Holland, 2 from Belgium and 6 from N. France.

Teal (*Anas crecca*).

The following list includes an interesting batch of recoveries reported from Russia and some other records which are unusual as regards locality or date. Attention may be specially drawn to the two birds, probably a pair, which were ringed simultaneously at Peterborough in February and recovered together near Leningrad in April of the same year. Particularly remarkable is the record from Newfoundland, which is outside the normal range, four weeks after autumn ringing in England.

<i>Or.</i> 2903	Pembroke, 16.12.37.	Bolshezemelsk Tundra 12.6.40 [68° 15' N., 61° 35' E.].
3 birds	Colchester, winter 50/51.	Komi Republic, -.5.51 [ca. 60° N., 50° E.].
908068	Peterborough, 5.12.49.	Ditto, 14.5.50.

No.	Ringed.	Recovered.
903001	Pembroke, 17.12.45.	Pechora River, Komi Republic, 27.5.46 [65° 20' N. 52° E.].
908321	Abbotsbury (Dorset), 30.12.50.	Udorsk, Komi Republic, 25.5.51.
908596	Slimbridge (Glos.), 14.12.50.	Ukhta Dist., Komi Republic, 18.8.51.
905683	Pembroke, 12.1.51.	Ulyanovsk (ex Simbirsk), 2.9.51.
908300	Peterborough, 20.2.50.	Chkalov (ex Orenburg), 23.9.50.
907753	Colchester, 30.1.50.	R. Yula, Archangel, 11.5.51.
909886	Ditto, 4.12.50.	Molotovsk, Archangel, -10.51.
907062	Peterborough, 13.2.49.	Solvychegodsk, Archangel, 14.8.49.
311316	Leswalt (Wigtown), 28.2.49.	River North Dvina, Archangel, -9.49.
904610	Pembroke, 4.1.47.	Yaroslav Prov., -5.51 [58° N., 40° 30' E.].
908307	Peterborough, 20.2.50.	Vologda Prov., 24.4.51.
908651	Ditto, 24.2.50.	Ditto, 1.5.51.
905044	Pembroke, 2.12.47.	Ditto, -7.51.
904967	Ditto, 26.11.47.	Vladimir Prov., 2.8.49 [56° 30' N., 41° 30' E.].
910655	Colchester, 21.2.51.	Ditto, 5.8.51.
907049	Peterborough, 11.2.49.	Murmansk Prov., 28.5.51.
908102	Ditto, 13.12.49.	Ditto, 8.6.51.
907684	Colchester, 15.1.50.	Karelian Isthmus, 2.9.51.
910096	Ditto, 16.12.50.	Ditto, 12.8.51.
909208	Ditto, 22.10.50.	Karelo-Finnish Republic, 14.9.51.
908147	Peterborough, 27.12.49.	Ditto, 12.5.51.
911624	Ditto, 1.3.51.	Ditto, 11.5.52.
905881	Pembroke, 26.12.50.	Ditto, 17.4.51.
909105	Colchester, 16.10.50.	Leningrad, 22.4.51.
907229	Peterborough, 4.3.49.	Ditto, 17.4.50.
2 birds	Ditto, winter 49/50.	Ditto, -8.51.
2 birds (♂ & ♀)	Ditto, 12.2.51.	Ditto, 21.4.51.
912451	Ditto, 30.12.51.	R. Svir, L. Ladoga, 3.4.52.
904382	Pembroke, 20.12.46.	L. Ladoga, -8.51.
904501	Ditto, 26.12.46.	Ditto, 17.8.47.
904845	Ditto, 3.11.47.	Leningrad, 12.4.48.
905149	Ditto, 30.1.49.	Ditto, 3.5.50.
908333	Abbotsbury (Dorset), 30.12.50.	Ditto, 24.4.51.
910095	Colchester, 16.12.50.	Lake Ilmen, Novgorod, 10.9.51.
907930	Peterborough, 24.11.49.	Ditto, 15.5.50.
RW.8780	Leswalt (Wigtown), 19.2.49.	Ditto, 19.4.50.
909070	Colchester, 11.10.50.	Novgorod Prov., 6.8.51.
910023	Ditto, 12.12.50.	Ditto, 20.4.51.
907816	Ditto, 24.2.50.	Ditto, 26.8.50.
907738	Ditto, 30.1.50.	Ditto, -9.51.
908120	Peterborough, 14.12.49.	Ditto, 26.4.50.
907715	Colchester, 25.1.50.	Polotsk, 2.8.51 [55° 30' N. 28° 50' E.].
909661	Slimbridge (Glos.), 5.3.51.	Kirovograd, Ukraine, 15.8.51.

No.	Ringed.	Recovered.
908755	Peterborough, 6.3.50.	Moldavian Republic (ex Bessarabia), 27.8.50.
907422	Ditto, 7.11.49.	Vaivara, Estonia, 9.4.50.
905696	Pembroke, 13.1.51.	Wloclawek, Poland, 16.3.51 [52° 39' N., 19° 5' E.]
905576	Ditto, 25.12.50.	Dillingen, Bavaria, 22.12.52 [48° 34' N., 10° 30' E.]
907620	Colchester, 5.12.49.	South Bohemia, 26.10.51 [49° 8' N., 15° E.]
902353	Pembroke, 23.9.39.	Sæbo, Norway, 24.7.41 [62° 12' N., 6° 30' E.]
911838	Slimbridge (Glos.), 29.12.51.	Onsøy, Norway, 29.9.52 [59° 15' N., 10° 54' E.]
912984	Colchester, 7.10.52.	Near Carcassonne (Aude), France, 3.1.53.
913090	Ditto, 14.10.52.	Tautavel (Pyrénées Orientales), France, 12.11.52.
910746	Ditto, 4.3.51.	Burano (Venezia), Italy, 16.12.52.
911489	Peterborough, 27.2.51.	Ravenna, Italy, 30.11.52.
911406	Ditto, 21.2.51.	Cabanillas (Navarra), Spain, 30.11.52.
914080	Slimbridge (Glos.), 10.10.52.	Montemor Novo (Alemtejo), Portugal, -.2.53.
913235	Colchester, 24.10.52.	Terceira, Azores, 24.12.52.
912832	Peterborough, 9.11.52.	Fogo Dist., Newfoundland, 5.12.52.

The numerous other records from abroad are distributed as follows:—France 29, Belgium 3, Holland 16, N. Germany 9, Poland (former Pomerania) 1, U.S.S.R. (former East Prussia) 4, Denmark 22, Sweden 15, and Finland 16. There are also 4 cases of birds ringed in England and recovered in Scotland, and 37 showing movement from England and Wales to Ireland.

Gadwall (*Anas strepera*).

RINGED AS FULL-GROWN.

911148	Colchester (Essex), 15.3.52, for Wildfowl Inq. Ctee.	Walberswick (Suffolk), 9.11.52 [48 m. N.E.]
911159	Ditto, 3.6.52.	Genemuiden (Overijssel), Holland, -.12.52 [52° 38' N., 6° 3' E.]

Wigeon (*Anas penelope*).

The following list consists mainly of an interesting batch of records from the territories of the U.S.S.R. The first recovery locality is the farthest east for any British-ringed duck.

RINGED AS FULL-GROWN.

907344	Near Peterborough (Northants.), 7.3.49.	Alexandrovsk Dist. (Tomsk Prov.), Siberia, 3.6.49 [56° 45' N., 85° 15' E.]
907324	Ditto, 6.3.49.	Samarovsk (Tumen Prov.), Siberia, 20.10.49 [60° 25' N., 69° E.]

No.	Ringed.	Recovered.
907215	Ditto, 2.3.49.	Mouth of R. Ob., Siberia, -6.49 [66° 30' N., 67° 20' E.].
904208	Slimbridge (Glos.), 27.9.47.	Aromashev, ex Petropav- lovsk (Tumen Prov.), Siberia, 5.5.49 [56° 30' N., 69° 30' E.].
RW.8766	Leswalt (Wigtown), 19.2.49.	River Ob. (Tumen Prov.), Siberia, 1.6.50 [63° 0' N., 65° 32' E.].
906670	Slimbridge, 10.3.49.	Chelyabinsk, E. Russia, 4.9.50 [55° N., 63° 30' E.]
311326	Leswalt, 21.3.49.	Bashkir Republic, E. Russia, -8.50 [55° 25' N., 54° 30' E.].
907374	Peterborough, 24.3.49.	Kirov Prov., Russia, 22.4.51 [58° 25' N., 51° 10' E.].
907278	Ditto, 6.3.49.	Murom (Gorgov Prov.), Russia, 3.5.51 [55° 38' N., 42° 15' E.].
Or.4738	Pembroke, 8.1.50.	Udorsk Dist. (Komi Re- pub.), N.E. Russia, 15.5.50 [63° 50' N., 49° 10' E.].
907304	Peterborough, 6.3.49.	R. Mezen (Archangel Prov.), N. Russia, 14.5.51 [64° 55' N., 46° E.].
907493	Ditto, 14.11.49.	Ditto, 24.8.50.
907349	Ditto, 11.3.49.	Staraya Russa (Novgorod Prov.), W. Russia, 26.8.49.
Or.2715	Pembroke, 29.11.37.	Near Leningrad, Russia, 19.5.41.
906770	Slimbridge, 6.4.50.	Lake Ilmen, Novgorod, W. Russia, 28.9.50.
907336	Peterborough, 7.3.49.	Ludwigsort, Frisches Haff, Poland [formerly Ger- many], 3.9.50.
Or.4731	Pembroke, 1.1.50.	Kurisches Haff, Lithuania [formerly Germany], 13.8.50.
907525	Peterborough, 18.11.49.	Near Meldorf, Schleswig- Holstein, Germany, 25.10.52.
911105	Colchester (Essex), 4.2.52.	Makkum (Friesland), Holland, 17.11.52.

Pintail (*Anas acuta*).

RINGS ISSUED TO WILDFOWL INQUIRY COMMITTEE.

RINGED AS FULL-GROWN.

927715	Slimbridge (Glos.), 28.1.50.	River Ob (Tumen Prov.), Siberia, 19.5.50 [65° 25' N., 64° 36' E.].
906658	Ditto, 23.11.49.	Ulyanovsk Prov., S.E. Russia, -5.51 [54° 35' N 47° 15' E.].

No.	Ringed.	Recovered.
925386	Abbotsbury (Dorset), 2.2.47.	Novgorod Prov., W. Russia, 20.4.49 [57° 35' N., 30° 48' E.].
909501	Slimbridge, 11.7.50.	Forserum, Sweden, 25.8.52 [57° 41' N., 14° 28' E.].
911922	Ditto, 13.2.52.	Ameland, West Frisian Is., 20.11.52.
911924	Ditto, 13.2.52.	Mont St. Michel (Manche), France, 1.11.52.
911858	Ditto, 19.10.51.	Comacchio (Emilia), Italy, 27.2.53.

Shoveler (*Spatula clypeata*),

RINGED AS FULL-GROWN.

909575	Slimbridge (Glos.), 4.12.50.	Tuam (Galway), 13.12.52.
Or.3761	Pembroke, 21.12.38.	Lake Ilmen, Novgorod Prov., W. Russia, 24.8.46.
908848	Peterborough, 19.9.50.	Venev (Tula Prov.), Russia, 27.8.51 [54° 22' N. 38° 18' E.].
914002	Slimbridge, 14.8.52.	St. Agnant (Charente Inf.), France, 8.11.52.

Red-crested Pochard (*Netta rufina*).

RINGED AS JUVENILE FROM PRESUMABLY IMPORTED STOCK.

AF.2077	London, 1.9.52, by London N.H.S.	Hoogetveen (Drente), Holland, 3.1.53.
AF.2068	Ditto, 18.7.52.	Trentham (Staffs.), 16.8.52 [130 m. N.W.].

Tufted Duck (*Aythya fuligula*).

RINGED AS FULL-GROWN.

907832	Colchester (Essex), 2.3.50.	Kozhvinsk, Pechora region, Russia, 20.5.51 [65° 6' N., 57° E.].
910315	Ditto, 12.1.51.	Ust-Tsilma Dist., Pechora Region, Russia, 31.8.51 [65° 17' N., 52° 36' E.].
Or.4852	Pembroke, 24.1.51.	Solvychegodsk Dist., Archangel Prov., Russia, 15.5.51 [61° 20' N., 47° E.].
907734	Colchester, 30.1.50.	Kirov Prov., R. Kama, 10.8.51 [59° 46' N., 52° 6' E.].
323278	London, 25.2.43, by London N.H.S.	Shenkursk, Archangel Prov., Russia, spring 1946.
AN.1996	Ditto, 9.11.49.	Boden Dist. (Norrbotten), Sweden, -.8.52.
907794	Colchester, 16.2.50.	Gryt (Östergötland), Sweden, 15.4.52 [ca. 58° 10' N., 16° 50' E.].
910281	Ditto, 10.1.51.	Loftahammar, S.E. Sweden, 14.4.52 [57° 54' N., 16° 42' E.].

Grey Lag Goose (*Anser anser*).

RINGED AS FULL-GROWN.

No.	Ringed.	Recovered.
142791	Montrose (Angus), 21.11.52, by Severn Wildfowl Trust.	Bellurgan Point, near Greenore (Louth), 26.11.52.
127344	Mersehead (Kirkcudbright), 28.3.50, by Severn Wildfowl Trust.	R. Lagarfljöt, East Iceland, 17.8.52.

White-fronted Goose (*Anser albifrons*).

RINGED AS FULL-GROWN.

SWT.19	Slimbridge (Glos.), 29.2.52, by Severn Wildfowl Trust.	Clacton-on-Sea, Essex, -1.53.
SWT.33	Ditto, 29.2.52.	Kinnerton (Flints.), 10.12.52.
129427	Ditto, 27.2.50.	Kolguev I., N. Russia, -5.50 [69° 15' N., 49° 30' E.].
129408	Ditto, 27.2.50.	R. Sukhona (Vologda Prov.), Russia, 29.4.52 [60° N., 42° 45' E.].
SWT.46	Ditto, 29.2.52.	R. Oka (Ryazan Prov.), Russia, 30.4.52 [54° 23' N., 40° 25' E.].
SWT.38	Ditto, 29.2.52.	Belev (Tula Prov.), Russia, 20.4.52 [53° 45' N., 36° 10' E.].
128046	Ditto, 18.2.48.	Stade, near Hamburg, Germany, 6.10.52.
129356	Ditto, 27.2.50.	Aurich (Ostfriesland), Germany, -10.52.
SWT.48	Ditto, 29.2.52.	Near Leer (Ostfriesland), Germany, 31.10.52.
SWT.188	Ditto, 15.2.53.	Ditto, 14.3.53.
SWT.17	Ditto, 29.2.52.	Wenduine (West Flanders), Belgium, -12.52.

Pink-footed Goose (*Anser arvensis brachyrhynchus*).

130393	Lincolnshire, 2.12.50, ad., by Severn Wildfowl Trust.	Sermilikfjord, Angmagssalik Dist., E. Greenland, 9.5.51 [ca. 66° N., 38° W.].
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In addition to the foregoing record of special interest, birds netted in winter in Great Britain by the Severn Wildfowl Trust have been recovered within the country as follows:—Same winter, 63; early May following, 1 (Perthshire); second winter, 28; third winter, 26; fifth winter, 1 (a bird which had been flightless during the summer following ringing). The records for the winter of ringing show a southerly tendency where the distance covered is considerable. Some of the records for subsequent winters are from the same parts of the country in which the respective birds were originally caught.

Sparrow Hawk (*Accipiter nisus*).

RINGED AS YOUNG.

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
364402	Bethesda (Caerns.), 8.7.52, by D. A. Ratcliffe.	Mallwyd (Merioneth), 27.9.52 [37 m. SSE.].

RINGED AS FULL-GROWN.

344087	Fair Isle Bird Obs., 6.9.51.	Holbeach Marsh (Lincs.), -8.52.
344517	Gibraltar Point Bird Obs., (Lincs.), 6.11.50.	Brufat, Valdres, Norway, 30.6.52 [60° 52' N., 9° 39' E.].

Hen Harrier (*Circus cyaneus*).

RINGED AS YOUNG.

AE.2321	Orkney, 11.7.51, by E. Balfour.	Kinbrace (Sutherland), -6.52 [66 m. S.W.].
AD.5607	Ditto, 3.7.49.	Fraserburgh (Aberdeen), 19.12.52 [100 m. S.E.].
307608	Ditto, 12.7.52.	Kellas (Moray), 6.12.52 [100 m. S.].

Montagu's Harrier (*Circus pygargus*).

AN.9442	East Dorset, 2.7.50, young, by K. B. Rooke.	Montreuil (P. de C.), France, 20.5.52.
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Peregrine (*Falco peregrinus*).

404715	Cumberland, 21.5.46, young, by R. H. Brown.	St. John's, Isle of Man, -4.52.
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Merlin (*Falco columbarius*).

RINGED AS MIGRANT.

346551	Fair Isle Bird Obs., 19.8.52.	Blairgowrie (Perth), 17.12.52.
346556	Ditto, 16.9.52.	Occumster (Caithness), 3.10.52.

Kestrel (*Falco tinnunculus*).

RINGED AS YOUNG.

361287	Sabden (Lancs.), 2.7.52, by J. J. Boon.	Near Ostende (West Flanders), Belgium, 13.10.52.
340739	Near Burnley (Lancs.), 2.7.49, by D. Leaver.	Holkham (Norfolk), 26.6.52 [150 m. S.E.].
362284	Near Bradford (Yorks.), 25.6.52, by Holmes Hutton and Chippendale.	Long Eaton (Derby), 24.9.52 [65 m. S.S.E.].
362283	Ditto, 25.6.52.	Near Castleford (Yorks.), 13.9.52 [16 m. E.S.E.].
330448	Goxhill (Lincs.), 22.6.47, by H. Van den Bos.	Breteuil (Eure), France, 8.1.53.
334440	Repton (Derby), 28.6.52, by Repton School.	Chanctonbury Ring (Sussex), 30.8.52 [140 m. S.S.E.].
362970	Shardlow (Derby), 30.6.52, by J. B. C. Crompton.	Arundel (Sussex), 2.12.52 [142 m. S.S.E.].

No.	Ringed.	Recovered.
341005	Malldraeth Marsh, Anglesey, 12.6.52, by D. Payne.	Puncknowle (Dorset), -7.52 [185 m. S.S.E.].
319015	Sway (Hants.), 20.6.52, by E. Cohen.	Near Devizes (Wilts.) 9.9.52 [42 m. N.N.W.].
319016	Ditto, 20.6.52.	Brightwell Baldwin (Oxon), -9.52 [65 m. N.N.E.].
355753	Near Fordingbridge (Hants.), 30.6.52, by Ash & Ridley.	Fishbourne (Sussex), 18.2.53 [48 m. E.].
Jersey E.76	Jersey, C.I., 13.7.52, by Soc. Jersiaise.	Savennières (Maine et Loire), France, 4.11.52 [47° 25' N., 0° 45' W.].

Water Rail (*Rallus aquaticus*).

RINGED AS FULL-GROWN.

905337	Abbotsbury (Dorset), 29.12.50, for Wildfowl Inq. Ctee.	Where ringed, 19.12.51 and 4.12.52.
233473	Near Andreas, I. of Man, 28.12.50, by Cowin, Crellin, Moss & Pool.	Near Alkmaar, N. Holland, 8.11.52.

Cornerake (*Crex crex*).

246902	Fair Isle Bird Obs., 4.6.52.	Near Turriff (Aberdeen), 17.8.52.
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Moorhen (*Gallinula chloropus*).

RINGED AS FULL-GROWN.

AF.1038	Colchester (Essex), 10.6.52, by C. B. Wainwright.	Near Attleborough (Norfolk), 3.1.53 [45 m. N.].
350752	Canterbury (Kent), 10.5.51, by St. Edmund's School.	Sheerness (Kent), 1.3.53 [18 m. N.W.].

Coot (*Fulica atra*).

RINGED AS FULL-GROWN.

AE.8755	Colchester (Essex), 17.1.52, by C. B. Wainwright.	Abbotsbury (Dorset), 9.12.52 [170 m. S.W.].
AF.1071	Ditto, 14.10.52.	Saintes (Charente Inf.), France, 19.10.52.

Oystercatcher (*Hæmatopus ostralegus*).

RINGED AS YOUNG.

344125	Fair Isle Bird Obs., 22.6.52.	La Plaine (Loire Inf.), France, 7.9.52.
355321	Grogarry, S. Uist (O. Hebrides), 23.6.52, by P. J. Chadwick.	Parkgate, Wirral (Ches.), 22.3.53 [310 m. S.S.E.].
362629	Grandhome (Aberdeen), 3.6.52, by Miss E. A. Garden.	Largo (Fife), 22.12.52 [75 m. S.S.W.].
366910	Newtonmore (Inverness), 12.6.52, by R. Perry.	Heswall, Wirral (Ches.), 7.3.53 [245 m. S.].
314979	Rue Point (I. of Man), 22.7.45, by Cowin, Crellin, Ladds & Williamson.	Where ringed, 14.4.52.
338459	Beaulieu River (Hants.), 20.6.49, by D. W. Poole.	Bricqueville (Manche), France, 8.8.52 [48° 54' N., 1° 32' W.].

Lapwing (*Vanellus vanellus*).

RINGED AS YOUNG.

No.	Ringed.	Recovered.
261383	Gladhouse (Midlothian), 3.6.51, by Smith & Walker.	Waterville (Kerry), 19.1.53.
267181	Kendal (Westmor.), 29.5.52, by A. C. Whiteside.	Greystones (Wicklow), -.12.52.
253420	Near Kirkby Stephen (Westmor.), 19.5.51, by R. M. Band.	Douglas (Cork), 28.12.52.
271817	Near Padiham (Lancs.), 16.7.52, by J. J. Boon.	Portmarnock (Dublin), 15.11.52.
256874	Near Clitheroe (Lancs.), 19.5.51, by J. J. Boon.	Near Wicklow, 7.12.52.
262928	Near Garstang (Lancs.), 22.6.52, by R. M. Band.	Finglas (Dublin), 8.12.52.
240303	Ditto, 12.6.49.	Kilmallock (Limerick), -.4.52.
262897	Ditto, 15.6.52.	Quimperlé (Finistère), France, 25.1.53.
270315	Rockcliffe Marsh (Cumb.), 25.5.52, by R. H. Brown.	Near Daoulas (Finistère), France, 24.1.53.
267184	Near Kendal (Westmor.), 31.5.52, by A. C. Whiteside.	Near St. Nazaire (Loire Inf.), France, 7.2.53.
268884	Near Appleby (Westmor.), 20.5.52, by R. W. Robson.	Near Gros-Breuil (Vendée), France, 5.12.52 [46° 33' N., 1° 36' W.].
250594	Aultbea (Ross.), 24.5.50, by P. A. Rayfield.	Near Beauvoir (Vendée), France, 15.1.53.
270442	Fordingbridge (Hants.), 2.6.52, by Ash & Ridley.	Marennes (Charente Inf.), France, 2.1.53.
257745	Kirkby Stephen (Westmor.), 7.6.52, by R. M. Band.	Near La Rochelle (Char- ente Inf.), France, 17.2.53.
263543	S. Uist, Outer Hebrides, 19.6.52, by P. J. Chadwick.	Near Biganos (Gironde), France, 21.1.53.
<i>Witherby</i> S. 3744	Newtonmore (Inverness), 23.6.52, by R. O. Blyth.	Soulac-sur-Mer (Gironde), France, 3.12.52.
249682	Near Penicuik (Midlothian), 16.6.52, by Midlothian Orn. Cl.	Llanera (Asturias), Spain, 16.12.52 [ca. 43° 30' N., 5° 50' W.].
256857	Whitwell (Notts.), 13.5.51, by J. J. Boon.	Near Gijon (Asturias), Spain, 20.3.52.
261689	Kelling (Norfolk), 21.5.52, by P. R. Clarke.	Los Barrios de Salas, (Leon), Spain, 8.12.52 [ca. 42° 30' N., 6° 40' W.]
245518	Monikie (Angus), 17.5.52, by A. Cross.	Setil, S. Portugal, -.1.53 [ca. 39° 5' N., 8° 45' W.].
250530	Near Watlington (Oxon.), 18.6.50, by J. Field.	Almodovar, S. Portugal, 12.1.53 [37° 31' N., 8° 1' W.].
237087	Aberffraw, Anglesey, 1.7.51, by D. R. Mirams.	Faro (Algarve), Portugal, 10.1.53.

Records from British localities include one of a young bird from its native area in N. Scotland in January of its first winter.

(To be concluded in the September number.)

NOTES.

On the feeding habits of the Redshank and the Spotted Redshank.—Observations were made on the feeding of Redshank (*Tringa totanus*) and Spotted Redshank (*T. erythropus*) on a shallow, tideless mud lagoon surrounded by reeds. The method employed was to observe the activity of each bird every two minutes. When a bird was observed feeding, the approximate depth of water in which it was standing was recorded; this was done by classifying under the following headings:—

- (a) Feeding on dry ground.
- (b) Feeding with water level not above tarsus.
- (c) Feeding with water level above tarsus but below belly.
- (d) Feeding with water level up to the belly.

The observations were carried out in one-and-a-half hour periods spread throughout the day. The figures obtained show a considerable difference between the two species:

SPOTTED REDSHANK.			
<i>On Ground.</i>	<i>Not above Tarsus.</i>	<i>Above Tarsus.</i>	<i>Up to Belly.</i>
9	130	301	152
1.5%	22.0%	50.8%	25.7%
REDSHANK.			
<i>On Ground.</i>	<i>Not above Tarsus.</i>	<i>Above Tarsus.</i>	<i>Up to Belly.</i>
115	232	13	0
31.9%	64.5%	3.6%	0.0%

Thus the depth of water in which the Spotted Redshank feeds is noticeably deeper than is the case with the Redshank, showing a distinction in the ecology of these two closely related species.

The method of feeding in which the bill, at a small angle to the water, is swept rapidly from side to side as described by D. H. Wilkinson (*antea*, vol. xlv, pp. 285-286) was observed in the case of the Spotted Redshank only, but was used very much less frequently than the usual method of probing with a nearly vertical bill, in a manner similar to the Redshank. D. B. PEAKALL.

Baird's Sandpiper in Sussex and Kent.—On September 19th, 1952, with R. Codd and A. G. Cooke, I found a bird at the Wicks, Dungeness, that we eventually decided was a Baird's Sandpiper (*Calidris bairdii*). Later the same day I watched it again, this time in company with M. Barry and M. Hall. On September 20th the identification was confirmed by D. D. Harber and W. S. Nevin with Miss H. M. Rowland and on September 21st by G. des Forges, I. J. Ferguson-Lees and C. W. G. Paulson. Photographs were taken by Mr. des Forges and three of these are reproduced on plates 44-46. It was subsequently watched on both sides of the county boundary by many observers on most days until September 27th when it was last seen by Dr. L. A. Collins and Mr. Harber. For the most part it did not associate with other small waders, but both Dunlins (*C. alpina*) and Little Stints (*C. minuta*) were present by

the same pools and these afforded a basis for comparison. I made a field-sketch and the following description is based upon this and upon notes made by Messrs. Harber, Ferguson-Lees, Paulson and Nevin.

In appearance it was roughly the shape of a Little Stint, but larger; it was distinctly smaller than the Dunlins, but trimmer and not so stout with the wings projecting noticeably beyond the tail. The bill was black and rather deceptively shaped: at certain angles it appeared slightly decurved and longer than the head, but it is borne out by the photographs (*vide* plate 45) that this was an exaggerated effect. The legs were also black, but not so dark as the bill and had a greenish tinge in certain lights. The cheeks and sides of neck were buffish, the crown darker. Light superciliary stripes met over the bill forming a whitish forehead and emphasizing a "capped" appearance. The chin and throat were white and the breast buff noticeably streaked and with the markings finishing abruptly giving the appearance of a Pectoral Sandpiper (*C. melanotos*). The rest of the under-parts were pure white. The mantle and wings were very strikingly marked with a "scaly" pattern produced by pale buffish edgings to dark-centred feathers. In flight the wings showed no distinctive pattern, though there was a greyish, transverse line. The tail was rather pointed, with the central feathers dark (except at the tips) and the outer feathers smoky-grey. The lateral upper tail-coverts were whitish.

The bill, though obviously not nearly so long nor so thick as those of the Dunlins, gave a misleading effect of length and decurvature which caused preliminary doubts about the bird's identity but careful examination showed that this effect was exaggerated and that the bill in fact was compatible with that of a Baird's Sandpiper. The bird was extremely tame and was often approached to within a few feet; the photographs were obtained with only rudimentary attempts at concealment. It obtained its food both by probing and by picking it from the surface. Its call was variously noted—as a short "krip," "treek," "whrrup," "twillink" and "pruwick," this being normally uttered in flight; in addition a more drawn-out "tchwereep" and a short, liquid whistle were heard. This is the seventh British record, the fourth for Sussex and the first for Kent.

W. G. FLUKE.

Woodchat Shrikes in London (Surrey), Great Saltee (Co. Wexford), Lundy and Orkney.—Several observers have sent us details of a Woodchat Shrike (*Lanius senator*) that remained in Richmond Park, Surrey, for some three weeks in April and May, 1953. It was first seen on April 13th (an early date) by A. Crutchley; the identification was confirmed on April 19th by E. D. Bushby, and on the 21st by B. A. Marsh. It was later seen by a large number of observers (including E.M.N. and P.A.D.H.) until the morning of May 5th. On May 3rd a photograph was taken by Mr. Marsh and this is reproduced on plate 47; unfortunately the front of the head and the under-parts are thrown into shadow by the sun's shining directly onto the bird's back, but a good impression is given here of the rather poor plumage in which the bird was. It seemed to be an immature with somewhat worn feathers; and the amount

of black on the forehead and round the eye, unmixed with chestnut, suggested a male. The scapular-patches, rump, and under-parts were greyish rather than white or cream.

Other records of Woodchat Shrike in Britain that have been reported to us in the first half of 1953 include :

GREAT SALTEE (Co. WEXFORD). A female trapped and ringed on May 13th ; this is the fifth record for Ireland. (R. F. Ruttledge).

LUNDY BIRD OBSERVATORY (DEVON). A female on May 14th ; it is interesting to note that this was only the day following that on which one was trapped at Great Saltee. Another on June 8th ; this appeared to be a male. These are the fourth and fifth records for Lundy. (Peter Davis).

ORKNEY. A presumed male was watched at Evie, Mainland, by Edwin Cohen, E. Balfour and P. E. Brown on June 23rd. Apparently the second record for Orkney.

REVIEW.

The Birds of Lancashire. By Clifford Oakes. (Oliver & Boyd, Edinburgh, 1953). 21s. od.

One cannot fail to be impressed by the wealth of information which is presented here, and the care with which it has evidently been sifted. Local distribution, of course, is generally given in considerable detail, breeding dates and clutch-size are often indicated, and there is much information on local movements and arrival dates. In a number of cases it has been possible to record significant changes in status, many of these being increases—for example, Mistle Thrush, Green Woodpecker, Kestrel, Barn Owl, Little Grebe, Turtle Dove, Curlew. With regard to the Green Woodpecker, the bird's spread elsewhere, and the customary disappearance of a species whose chosen habitat is destroyed, make one doubt the author's suggestion that Lancashire spread may be connected with war-time tree felling in the north, and consequent dispersal of species. Another feature is the frequent indication of the altitude to which breeding occurs in the hills ; the Robin provides a good example of "vertical" migration. The book has been written entirely from material of Lancashire origin, and it is pleasantly free from padding ; for example, the Great Tit is dismissed in under 5 lines.

Throughout the book there is evidence of the high standard which Mr. Oakes has set himself in his critical and cautious approach to unusual records, both old and recent. He has established that several previously accepted records refer in fact to Yorkshire ; records of Grey-headed Wagtail and Harlequin Duck published in *The Handbook* are square-bracketted, and many records of birds shot in the nineteenth century are rejected as lacking confirmation. One cannot help wondering how some of his records, for example of the Shag, would fare, on the evidence shown, in the hands of an equally critical county historian fifty years hence.

The treatment is by subspecies, 281 forms being dealt with, of which 276 are admitted. Under British Song Thrush is included reference to a smaller, darker and thus far unidentified race which is frequently seen on passage. The opening chapter deals with the geography of Lancashire, including climate, but there is little of a direct ornithological nature in the introductory matter.

We notice that flight netting of shore birds has now virtually ceased, but that "douker nets" set at low tide for the capture of diving ducks, continue to be used. It would be interesting to know more about this practice, and the toll that it levies.

The date deadline used in preparing the book is not stated nor, in the Literature section, are dates given of periodicals consulted. The species

accounts however seem comprehensive up to the end of 1948, with a few 1949 items added; while an addenda section includes 1951 records.

The inconsistencies in the use of capitals for birds' names seem too numerous to be due to oversight. The book is well produced, with 2 maps and 31 plates of photographs of Lancashire birds, bird watchers, habitats and scenes. It will be essential to workers in the county and of considerable comparative interest to those outside it. How far beyond the bounds of Lancashire are the males of Wood Warbler and Tree Pipit greatly in excess of the numbers of females? P.A.D.H.

NOTICES AND REQUESTS FOR INFORMATION.

Unusual passage of Firecrests.—It is evident that a quite unusual number of Firecrests (*Regulus ignicapillus*) passed through the south and south-east of Britain, particularly in the region of the coast, during the late autumn of 1952 and the spring of 1953, while not a few were recorded during the intervening winter months. The information we have at present suggests that some of the birds involved in the abnormal autumn passage subsequently dispersed in the southern counties and that there followed in the spring what may have been a return passage or another and separate incursion. Mr. Philip S. Redman has agreed to undertake the analysis of the records and anyone who observed the species during the period in question is asked to send details to him at Heston, Spot Lane, Bearsted, Maidstone, Kent; those observations that have already been sent to us will be passed to Mr. Redman.

Quails in Britain, 1953.—We have received reports which suggest that Quails (*Coturnix coturnix*) have appeared in Britain in unusual numbers during the summer of 1953, particularly in the west of England as far north as Cheshire and Lancashire. Records in Scotland, Wales and Ireland from localities where none has been seen for some years indicate that the birds are widely spread. We shall be very glad therefore to receive any records of Quail in 1953 and at the same time, to help comparison, any *unpublished* ones for 1950, 1951 and 1952. Mr. R. E. Moreau will be analysing the data sent in, but it is particularly requested that all reports should be addressed to us at Fordlands, Crowhurst, Sussex. All records will be gratefully acknowledged.

The "wreck" of Leach's Petrels and the abnormal passage of Wood Sandpipers in 1952.—Mr. Hugh Boyd's work on the disastrous "wreck" of Leach's Petrels (*Oceanodroma leucorhoa*) in October-November, 1952, is nearing completion, and we shall be publishing his summary in a forthcoming number. Mr. I. C. T. Nisbet has agreed to undertake the compilation of a short report on the abnormal passage of Wood Sandpipers (*Tringa glareola*) in the autumn of 1952 and all the records received by us have been sent to him. Anyone who did not send his records either to us or to the relevant county bird report is asked to send them to Mr. Nisbet at 24, Penwerris Avenue, Osterley, Middlesex.

The Collared Turtle Dove.—Mr. Reg. May informs us that the Collared Turtle Dove (*Streptopelia decaocto*) reappeared at Middle Manton, Lincolnshire, on April 21st, 1953, after an absence of seven or eight months, and at the time of writing (August 1st) is still present (see *antea*, pp. 51-55).

LETTERS.

THE DERBYSHIRE ALBATROSS.

To the Editors of BRITISH BIRDS.

SIRS,—I was most interested to read the account by J. D. Macdonald of the recovery of an albatross in Derbyshire (*antea*, pp. 110-111) and to see the accompanying photograph (plate 13), because in my opinion the bird was a Yellow-nosed Albatross (*Diomedea chlororhyncha*) and not a Black-browed

D. melanophrys) as reported. It was an immature individual such as are very common off the coast of Western Australia and which Rothschild long ago described as *carteri*. The particulars given agree very well with an immature *chlororhyncha*, including the white head and nape and the absence of the eye-brow line (incidentally, in Australian waters the immatures of both species never have "largely grey heads," but are pure white in this respect). The under-wing pattern as shown in the photograph, especially that of the right wing, suggests the sharp boundaries and large amount of white characteristic of *chlororhyncha*. Finally, in connection with the estimated dimensions of the Derbyshire bird, it is worth adding that the wing-span of *chlororhyncha* is smaller than in *melanophrys*; in *A Handbook of the Birds of Western Australia* (Serventy and Whittell, 1948) we give 5ft. 10ins. as a minimum measurement of the former's wing (when greatly stretched). D. L. SERVENTY.

To the Editors of BRITISH BIRDS.

SIRS,—I would refer you to the note (*antea*, pp. 110-111) on the albatross that was captured in Derbyshire in August, 1952, and which was subsequently identified from a photograph (*vide ante*, plate 13) and a brief description as a Black-browed Albatross (*Diomedea melanophrys*). I have compared the photograph very critically with the albatross material in our collections and would state that, in my opinion, the species captured in Derbyshire was not *D. melanophrys*, but the closely allied Yellow-nosed Albatross (*D. chlororhyncha*). The scanty information given in the note by Mr. J. D. Macdonald confirms this decision.

D. chlororhyncha and *D. melanophrys* differ mainly in the colouration of the bill, as well as in its size, and in the amount of blackish above the eyes and in the coloration of the legs and feet. The bill of *D. chlororhyncha* is mainly of a slate-grey colour, the culminicorn being yellowish shading to dull orange towards the tip. The amount of dusky shading above the eye varies individually, but is never so extensive as in *D. melanophrys*. The legs and feet of *D. chlororhyncha* are flesh-coloured. In *D. melanophrys* the bill is entirely chrome-yellow in the adult stage and the legs and feet brownish yellow (*vide* Austin Roberts, *Birds of South Africa*, 1940, p.4).

It is a great pity that the bird was allowed to go free without first being identified beyond all doubt, but the photograph should be sufficient proof of the first authentic occurrence of this widely distributed, southern oceanic species in the British Isles. P. A. CLANCEY.

[The letters that are reproduced above are the only two that we have received criticising the identification of the Derbyshire albatross as of the Black-browed species and we publish them here as they help to provide a good illustration of the problems involved in identifying odd vagrants, and of the care and techniques which must be used in assessing inadequate evidence. In this connection we are very glad to reproduce below Mr. H. F. I. Elliott's careful analysis of the facts which provides unsolicited support of the original identification. We are always very glad to hear from anyone who is qualified to give judgment in such a matter.—EDS.]

To the Editors of BRITISH BIRDS.

SIRS,—In your note (*antea*, vol. xlvi, p. 111) on the albatross caught in Derbyshire in August, 1952, it is stated that juveniles of all the small albatrosses have largely grey heads. This is incorrect. The juveniles of at least the Yellow-nosed Albatross (*Diomedea chlororhyncha*) are readily distinguished from adults by having pure white instead of grey heads. Furthermore the dark tone on the head and neck of the juvenile Black-browed Albatross (*D. melanophrys*) can, according to Murphy, be "lost through abrasion, the first whiteness . . . coming as a result of wear" before the first complete moult.

These facts, combined with the existence of old and doubtful records of Yellow-nosed Albatrosses from the River Trent in 1836, and from Iceland about 1843, and modern proof that young birds of the Tristan da Cunha

breeding population regularly reach an area nearly 2,000 miles to the north within $4\frac{1}{2}$ months of fledging, have led me to examine the reasons given for accepting the Derbyshire occurrence as the second or third for Britain of the Black-browed Albatross. All the specimens, of the two species referred to, in the British Museum were examined, together with fresh skins of each recently brought back from Tristan. The latter include a fully fledged juvenile of *chlororhyncha*, hitherto not represented in the collection. In addition a large number of photographs of *chlororhyncha* in all stages of growth have been studied, including cine colour-film.

It is quite certain in the first place, for good reasons of plumage, size and geographical distribution, which it is unnecessary to detail, that the bird depicted in the photograph reproduced in *British Birds* (*antea*, plate 13) is either a Black-browed or a Yellow-nosed Albatross and not any other species. In either case, as chiefly indicated by the bill colour, it is not fully mature. On this basis its identity as one or other of these two species turns on four points, namely size, colour of bill, colour of the under surface of the wing and colour of the feathering around the eye.

(1) *Size*. The Black-browed Albatross is on the average considerably the larger of the two species, its recorded weight varying from one and a half to twice that of the other. Curiously enough, however, there is a considerable overlap in the wing measurements on record (i.e. from the carpal joint to the tip of the primaries) and even in total wing-spread the smallest recorded for *melanophrys* exceeds the largest for *chlororhyncha* by only three inches. Hence the fact that the nearest one can get to the measurements of the Derbyshire bird (by comparison with the size of the hand holding and roughly in the same plane as the right wing) suggests a wing measurement of about 500mm. and a total wingspread of $6\frac{1}{2}$ feet, is of little value in deciding the issue. At the most one may say that the small measurements reported, the apparent size in the photograph and the fact that the smallest wing-spread on record for *melanophrys* is just over seven feet, do slightly favour identification as *chlororhyncha*.

On the other hand the apparent size of the bill in the photograph favours precisely the opposite conclusion. Although there is virtually no difference in length of bill between the two species, the depth of bill of *chlororhyncha* is usually noticeably less. Again there is a very small overlap in recorded measurements, but allowing for this and the effect of foreshortening, the bill in the photograph is more suggestive of the deeper bill and the more marked lower angle of the gonys typical of *melanophrys*.

(2) *Bill colour*. Had those who handled the bird provided a precise description of the bill colour, identification would have been simple. At all stages the great part of the bill of *chlororhyncha* is black. In the juvenile about to leave the nest there is a very slight paleness on the apex of the culmen, which develops gradually into the golden yellow culmicorn of the adult, but at no stage can one conceive the most casual observer describing the bill as anything but plain 'black' (with more or less of a contrasting streak of colour on the top of the culmen). On the other hand the bill of the fledged *melanophrys* is never darker than 'greyish black' or 'black with an olive brown wash.' At the stage apparently reached by the Derbyshire bird one would, it is true, expect a yellowish-brown bill with a darker tip, but a specimen in the Museum taken off Chile in November, 1932, very possibly a bird of the year or about 7 months out of the nest, is recorded as having a bill 'bone colour with a darker tip' while by March 22nd birds of the year (one with down still adhering) were recorded, by the Norwegian scientific expedition of 1938, as already arriving at Tristan from their distant breeding-quarters and described in the field as having 'greenish-black' bills. In short, the description 'dark-coloured' and the indication of a darker unguis in the photograph (making due allowance for the effect of high lights) might well answer to an appropriate intermediate stage and favour identification as *melanophrys*.

(3) *Under-wing pattern.* At all stages the pattern of the underside of the wing of *chlororhyncha* has very much more white in it than that of *melanophrys*, in which in the young bird the white is reduced to a narrow axial streak. In particular the axillaries of the latter are grey and in the former almost entirely white. It is difficult to be certain of the effect of light and shade in the photograph, but the axillaries certainly look grey and the general effect of a broad dark margin to the wing fully supports identification as *melanophrys*.

(4) *Colour round the eye.* It is this point which in my view settles the issue. In all stages of *chlororhyncha*, from nestlings near fledging but still partly in down to breeding adults, there is a distinct dark supra-loral patch *in front of the eye*. This is a striking characteristic in the field and is present in all the specimens and photographs examined. On the other hand the somewhat similar dark feathering near the eye of *melanophrys* is as the name implies usually extended to form a 'brow,' but, though slightly more marked in front of than behind the eye, does not as in *chlororhyncha* nearly reach the bill and almost interrupt the white area between eye and bill. Furthermore in many specimens the dark brow is very much reduced and in one at least appears to be entirely absent. This specimen was collected off Chile in February—a yearling female. It is a very close counterpart of the Derbyshire bird, the photograph of which shows no trace of such a loral patch as without exception in the case of *chlororhyncha* presents the appearance of a dark triangle on the region of the eye.

I have no doubt therefore that, despite the somewhat tantalising nature of the evidence, the bird found in Derbyshire was in fact a Black-browed Albatross, most probably (judging by bill colour and assuming considerable wear) a bird of the year fledged four or five months previously.

H. F. I. ELLIOTT.

THE NAME "ARMORICAN WARBLER."

To the Editors of BRITISH BIRDS.

SIRS,—We find ourselves in a rather difficult position in arguments over the name given to our race of *Sylvia undata*. It was assumed in the past, because of our geographical position, that the bird was the same as that in N.W. France i.e., *Sylvia undata aremorica*, but as far as we can discover no authority has studied a range of skins, and there has been no large scale study of the living bird here. Mr. Dobson's excellent book will be the standard work on birds of the Channel Isles for many years to come, but since the end of the war, when the bulk of it was written, many new facts have been discovered, some of them completely unexpected. Consequently, until such time as a trinomial name can be attached to our race of *Sylvia undata* with absolute certainty, we feel that no useful purpose can be served by entering into arguments re Armorican Warbler, Dartford Warbler, the Dartford Warbler of Armorica, or any other permutation or combination of English words. The bird would not appear to be anywhere near extinction at the moment, but we do not propose endangering it in any way by making a skin collection: our work will be confined to field study and trapping live birds to be released after examination. Only further experience will tell us whether such methods are likely to be of use and many years may pass before any conclusions can be drawn.

Meanwhile the Ornithological Section of the Société Jersiaise has no particular feelings either way as regards the bird's future name but can see constant trouble with island subspecies until there exists a universally adopted system of English nomenclature. May we hope that as a result of this discussion, the various ornithological bodies in the English-speaking world will join together to produce one?

(*Ornithological Section of the Societe Jersiaise*).

CALVERT S. GRAHAM.
FRANCES LE SUEUR.

SECONDARY SONG.

To the Editors of BRITISH BIRDS.

SIRS,—M. D. Lister's paper on "secondary song" (*antea*, pp. 139-143) raises a number of interesting points which cannot be discussed adequately in a letter, but perhaps it is desirable to emphasize the main problem in regard to the classification of bird song into types. The terminology may be based on song's audible characteristics or its function, and audible characteristics being rather more easily assessed than function, it is attractive to advocate a terminology based on such characteristics. This leads to difficulties. Thus, for example, in some species both the threat and courtship songs are subdued. Whisper song, which I define as the quietest form of song, sometimes differs markedly from the pattern of the territorial song and may have a number of different functions in a single species. Moreover, not only may there be, as Mr. Lister points out, continuous gradation of utterance from quiet to loud song, but the function may vary according to the song's vigour and the circumstances in which it is sung.

The type of song which he calls "primary" is the form which can be most easily defined because its function and characteristics can usually be precisely indicated and its utterance is commonly limited topographically. It should surely be called, as he calls it in one context, "territorial song." The alternatives, "advertising song" and "primary song", are insufficiently precise. At this stage there is still much to be said for regarding "sub-song" as including all types of subdued non-territorial song. "Whispering song" and other subdued forms could then be regarded as categories within it; but, where possible, types of song should be defined in relation to their function. The term "rehearsed song" for the imperfect or relatively amorphous songs of young or old birds does not seem very appropriate. Some of these matters are discussed more fully in *The Wren*, now in press, and a book on bird song in preparation.

EDWARD A. ARMSTRONG.

To the Editors of BRITISH BIRDS.

SIRS,—I have read with interest the Rev. E. A. Armstrong's letter about my paper on "secondary song" (*antea*, pp. 139-143). I have put forward a tentative general classification based on two points, audibility range, and similarity to or difference from the primary song. Apart from the one case of "rehearsed song," which is largely self-evident, I have deliberately made no attempt at this time to classify the *functions* of either "primary" or "secondary song," as it seems to me that in the present stage of our knowledge all functional interpretation must surely be related solely to the species concerned, and that until much more evidence has been accumulated generalisations concerning functional interpretation are not justified.

Apart from special songs such as display or courtship songs, my own observations suggest that subdued song, both "whispering" and "sub-song", is not infrequently given when the singer is alone, and I have so far failed to interpret its function with certainty. Moreover, threat song, to take just one example, may in one species differ intrinsically from the primary song and so fall into the category of "sub-song" as defined in my paper, while in another it may possibly differ from the primary song only in volume and so come into the category of "whispering song." It must surely help towards a more exact understanding of the subject if, in trying to interpret the function of special songs, we can refer to some generally accepted terminology in order to avoid some of the confusion that has arisen in the past through the use of undefined or overlapping terms.

M. D. LISTER.

FIELD-CHARACTERS OF GREAT SHEARWATER.

To the Editors of BRITISH BIRDS.

SIRS,—E. M. Nicholson's comment on the letter in which E. Duffey draws attention to the useful field-character of a dark mid-ventral patch distinguishing the Great Shearwater from Cory's and other similar species (*antea*, vol. xlvi, p. 120), is I feel somewhat misleading. It is suggested that it is not uncommon for the dark patch to be absent, and that its absence does not therefore exclude the possibility of a bird being a Great Shearwater.

During three years spent in the vicinity of the main breeding colonies of the Great Shearwater, with frequent opportunities of observing well over a million pairs of this species, I never saw a bird in which the ventral patch was not perfectly visible in the field and I was much struck by the value of this character, especially to an observer in a small boat who is more likely to obtain a good view of the underside of the bird as it careens over the waves.

On one occasion only a Tristan Islander brought in what he described as a 'white petrel', which he had killed at its burrow and considered something quite out of the ordinary and probably a new species for the islands. It proved to be an obviously albinistic specimen of the Great Shearwater, not only completely lacking the dark ventral patch but also having an exceptionally pale crown, so much so that its correct identification in the field would have been problematical.

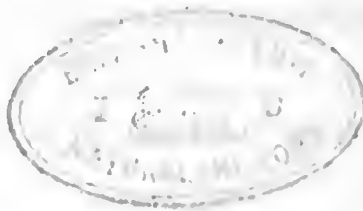
Mr. Nicholson's comment is based on the thesis that in some *skins* of Great Shearwaters the dark ventral patch is absent. But the absence is more apparent than real, being in my experience invariably due to the skins having been prepared with a ventral incision which tends to obscure the feature. Of the 21 skins in the British Museum all display the patch (though in several cases ventral incisions and poor make-up have reduced its conspicuousness), with the exception of one dated 1878, which is so dirty that its colour is uncertain. Of the nine specimens added by me to the collection, all, except the unique albinistic example referred to, show the patch clearly. It may be noted that it is equally well developed in birds of the year, in which the dark patch is usually embellished with the last traces of down.

There is in fact the strongest possible presumption that a shearwater observed in conditions which permit a good view of the underside and seen to lack a dark patch on the belly is *not* a Great Shearwater. H. F. I. ELLIOTT.

[In view of Mr. Elliott's outstanding experience of the species his correction which confirms Mr. Duffey's criticism, must be accepted.—E.M.N.]

PURCHASED

SEP 1953



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By
MASAUJI HACHISUKA,
PH.D., SC.D.

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BRITISH BIRDS

NUMBER 9, VOL. XLVI, SEPTEMBER, 1953.

REPORT ON BIRD-RINGING FOR 1952.

BY

SIR A. LANDSBOROUGH THOMSON, C.B., D.Sc., *Chairman*,
AND E. P. LEACH, *Hon. Secretary*,
Bird-Ringing Committee, British Trust for Ornithology.
(Continued from page 303).

Ringed Plover (*Charadrius hiaticula*).

RINGED AS YOUNG.

No.	Ringed.	Recovered.
X.1175	Rosemarkie (Ross.), 26.7.47, by J. Lees.	Opinan, Gairloch (Ross), 14.4.52 [60 m. W.].
RA.465	Spurn Bird Obs., 1.8.51.	Sea Palling (Norfolk), 5.4.53 [90 m. S.E.].
SJ.865	St. Osyth (Essex), 29.5.49, by R. W. Arthur.	Mouth of R. Orne, (Calvados), France, 1.11.52.
SE.627	Near Rye (Sussex), 23.7.49, by London N.H.S.	Pagham Harbour (Sussex), 14.11.52 [70 m. W.].

Snipe (*Capella gallinago*).

251933	Port of Menteith (Perths.), 22.6.50, young, by Miss W. U. Flower.	Hillsborough (D o w n) 29.12.52.
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RINGED AS FULL-GROWN.

SP.965	Fair Isle Bird Obs., 17.10.50.	Bodmin Moor (Cornwall), 11.10.52 [660 m. S.S.W.].
X.24254	Colchester (Essex), 7.9.52, by C. B. Wainwright.	Black Torrington (Devon), 22.12.52 [230 m. S.W.].
X.24093	Ditto, 10.8.52.	Deauville (Calvados), France, 2.2.53.
X.24245	Ditto, 30.8.52.	Champagné les Marais (Vendée), France, 24.12.52 [ca. 46° 20' N., 1° 10' W.].
X.24091	Ditto, 10.8.52.	Aveiro, Portugal, 25.1.53.

Curlew (*Numenius arquata*).

RINGED AS YOUNG.

361091	Pitlochry (Perth), 25.6.51, by H.G. Hurrell.	Near Ballymena (Antrim), 6.9.52.
345986	Edmundbyers (Durham), 17.7.50, by Ash & Ridley.	Straffan (Kildare), 10.1.53.
329681	Wynyard Park (Durham), 31.5.52, by P. A. Rayfield.	Roundstone (Galway), 15.2.53.
331199	Near Nateby (Westmor.), 2.6.52, by R. M. Band.	Annaghdown (Galway), 19.8.52.
366628	Appleby (Westmor.), 30.5.52, by R. W. Robson.	Near Belfast, 1.10.52.
367908	Ditto, 23.6.52.	Crosshaven (Cork), 4.1.53.
355775	Gisburn (Yorks.), 28.7.51, by J.J. Boon.	Near Ardfert (Kerry), 29.9.52.
361282	Ditto, 7.6.52.	Limerick, 30.11.52.

RINGED AS YOUNG.

No.	<i>Ringed.</i>	<i>Recovered.</i>
331217	Near Blubberhouses (Yorks.), 19.6.52, by R. M. Band.	Rathdowney(Leix), -9.52.
340344	Chartley (Staffs.), 16.5.51, by A. H. Johnson.	Mouth of R. Parrett (Som.), -12.52 [120 m. S.S.W.].

Common Sandpiper (*Actitis hypoleucos*).

RINGED AS MIGRANTS.

SN.871	Colchester (Essex), 6.9.49, by C. B. Wainwright.	Where ringed, 22.5.52.
X.7536	Halifax (Yorks.), 10.7.48, by Halifax Sci. Soc.	Where ringed, 25.6.50.

Green Sandpiper (*Tringa ochropus*).

PN.137	Colchester (Essex), 31.8.51, mi- grant, by C. B. Wainwright.	Where ringed, 2.7.52.
--------	---	-----------------------

Redshank (*Tringa totanus*).

RINGED AS YOUNG.

R.3988	Aberlady (East Lothian), 25.5.52, by Hamilton & Macgregor.	Dec Estuary (Flints.), -9.52 [190 m. S.].
PB.735	Ditto, 4.6.52, by I. V. Balfour- Paul.	Berwick-on-Tweed, 27.1.53 [35 m. S.E.].
X.13246	Appleby (Westmor.), 15.5.52, by R. W. Robson.	Carentan (M a n c h e), France, 5.11.52.

RINGED AS FULL-GROWN.

P.5142	Seahouses (Northumb.), 31.8.52, by Monks' Ho. Bird Obs.	Near Wisbech (Cambs.), -12.52 [220 m. S.].
SV.193	Colchester (Essex), 6.7.50, by C. B. Wainwright.	Near where ringed, 28.11.52.

Stone Curlew (*Burhinus oedipnemus*).

355722	Near Fordingbridge (Hants.), 24.7.51, young, by Ash & Ridley.	Durango (Vizcaya), Spain, 1.11.52.
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Great Black-backed Gull (*Larus marinus*).

407935	Steeppholm (Som.), 23.6.51, young by R. H. Poulding.	Guilvinec (Finistère), France, ca. 1.11.52.
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Lesser Black-backed Gull (*Larus fuscus*).

RINGED AS YOUNG.

AE.4875	Pennine Fells (Lancs.), 8.7.51, by Watts & McConville.	Nr. Chemillé (Maine et Loire), France, 28.9.52 [47° 13' N., 0° 43' W.].
AN.7089	Fair Isle Bird Obs., 7.7.50.	Near Cette (Hérault), France, 10.5.52.
AE.4795	Farne Is. (Northumb.), 3.9.51, by Northumb. & Durham N.H.S.	Castejón de Monegros (Huesca), Spain, 1.1.52.
AE.8272	Pennine Fells (Lancs.), 29.6.52, by Davis & Iles.	Safi, W. Morocco, 24.2.53 [32° 19' N., 9° 12' W.].
AE.6460	Ditto, 8.7.51, by Watts & McConville.	Off Cape Cantin, W. Morocco, 29.1.53.
AE.3075	Ditto, 27.7.50, by Davis & Iles.	Off coast of Maurctania, W. Africa, 25.2.53 [19° N., 16° 48' W.].

Other records include 2 from W. France, 7 from Portugal and 2 from S.W. France.

Of birds ringed as full-grown there is one record from France and one from Portugal.

Herring Gull (*Larus argentatus*).

RINGED AS YOUNG.

No.	Ringed.	Recovered.
AD.9446	Shiant Isles, Outer Hebrides, 14.7.50, by I. Munro.	Rosyth (Fife), -10.52 [170 m. S.E.].
AD.7978	Skokholm Bird Obs., 22.6.50.	Enniskerry (Wicklow), 13.6.52.
AF.5443	Gt. Saltee I. (Wexford), 4.8.52, by A. Darlington.	Near Granville (Manche), France, -11.52.
408907	Steeholm (Som.), 9.7.52, by R. H. Poulding.	Near Dol (Ille-et-Vilaine), France, 8.1.53.
AF.1417	Lundy Bird Obs., 8.7.52.	Near Brest (Finistère), France, 16.10.52.

Common Gull (*Larus canus*).

RINGED AS YOUNG.

354473	L. Carra (Mayo), 6.6.52, by Dublin F.C.	Limerick, 10.8.52 [75 m. S.S.E.].
347007	Ditto, 12.6.50, by R. F. Rutledge.	Bandon (Cork), 18.7.52 [135 m. S.].

RINGED AS FULL-GROWN.

329650	Strood, Kent, 20.2.47, by P. A. Rayfield.	Tammisaari, S. Finland, 15.7.51 [59° 58' N., 23° 25' E.].
--------	---	---

Black-headed Gull (*Larus ridibundus*).

RINGED AS YOUNG.

270381	Ravenglass (Cumb.), 18.6.52, by R. H. Brown.	Dovey Estuary (Mont.), -7.52 [125 m. S.].
362876	Heptonstall Moor (Yorks.), 8.6.52 by Watts & McConville.	Saxilby (Lincs.), 28.7.52 [70 m. S.E.].
369173	Ditto, 15.6.52.	Bridgend (Glam.), 30.7.52 [170 m. S.W.].
359730	Near Penicuik (Midlothian), 4.7.52, by Midlothian O.C.	South Bermondsey, London, 26.12.52 [330 m. S.S.E.].
358468	Ditto, 29.6.52, by D.G. Andrew.	Londonderry, 14.10.52.
368407	Leuchars (Fife), 4.6.52, by A. Cross.	Ardglass (Down), 4.12.52.
349133	Pentland Hills (Midlothian), 24.6.50, by Midlothian O.C.	Kingstown (Dublin), 22.11.52.
365796	Ravenglass (Cumb.), 6.7.52, by A. E. Male.	Near Dublin, 2.1.53.
362389	Haworth Moor (Yorks.), 3.7.52, by Holmes, Hutton & Chippendale.	Near Navan (Meath), 10.10.52.
366283	Ravenglass (Cumb.), 5.7.52, by A. E. Male.	Sallins (Kildare), 4.1.53.
369949	Ditto, 18.6.52, by R. H. Brown.	Woodsgift (Kilkenny), 30.1.53.
351910	Tregaron Bog (Cards.), 13.6.51, by L. G. Weller.	Bannow Bay (Wexford), 24.8.52.

RINGED AS YOUNG.

No.	Ringed.	Recovered.
359840	Near Penicuik (Midlothian), 5.7.52, by Midlothian O.C.	R. Lee, Cork, 16.3.53.
352637	Haworth Moor (Yorks.), 1.7.51, by R. F. Dickens.	Near Tralee (Kerry), -.10.52.
341308	Colchester (Essex), 11.6.50, by C. B. Wainwright.	Near La Tremblade (Char- ente Inf.), France, -.11.52 [45° 46' N., 1° 9' W.].
359725	Near Penicuik (Midlothian), 4.7.52, by Midlothian O.C.	R. Deva (Guipuzcoa), Spain, 16.12.52.
367952	Heptonstall Moor, 22.6.52, by Watts & McConville.	Palencia, Spain, 15.2.53.
341407	Colchester, 19.6.50, by C. B. Wainwright.	Lisbon, Portugal, 25.11.52.

RINGED AS FULL-GROWN.

343704	West Molesey (Surrey), 1.12.51, by London N.H.S.	Stakroge (Jutland), Den- mark, 29.5.52 [55° 54' N., 8° 50' E.].
355025	London, 16.1.52, by London N.H.S.	Horsens Fjord (Jutland), Denmark, -.4.52.
323645	Ditto, 10.3.43.	Near Hellevoetsluis (V o o r n e), Holland, 11.3.52.
345281	Ditto, 3.2.51.	H a m b u r g, Germany, 16.11.52.

Kittiwake (*Rissa tridactyla*).

364574	Lundy Bird Obs., -.5.52, age unknown.	Quend Plage (Somme), France, -.8.52.
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RINGED AS YOUNG.

356290	Farne Is., 3.7.52, by Northd. & Durham N.H.S.	Near Väderö Light, W. Sweden, -.12.52.
356246	Ditto, 26.6.52.	Bay of Biscay, -.11.52 [ca. 45° 30' N., 2° 55' W.]
368905	Ditto, 1.7.52.	At sea off Pasajes (Guip- uzcoa), Spain, 15.11.52.
367483	Ditto, 6.7.52.	Off Island of St. Miguel, Azores, 19.2.53.
362563	Lundy Bird Obs., 26.7.51.	Fuenterrabia (Guipuzcoa), Spain, -.12.52.

Common Tern (*Sterna hirundo*).

RINGED AS YOUNG.

X.10650	Farne Is., 31.7.52, by Northd. & Durham N.H.S.	Castro Urdiales (Santander) Spain, 1.10.52.
R.2520	Blakeney Pt. (Norfolk), 28.7.51, by Norfolk Nat. Trust.	Dakar, Senegal, W. Africa, 18.4.52.
S.8216	Nairn, 9.7.51, by J. Lees.	Axim, Gold Coast, W. Africa, 4.11.52.
X.17276	Leuchars (Fife), 9.7.52, by A. Cross.	Ambrizete, Port. West Africa, 26.11.52.

Arctic Tern (*Sterna macrura*).

RINGED AS YOUNG.

PX.771	Isle of May Bird Obs., 2.8.52.	North Sea, 56° 10' N., 3° 42' E., 29.8.52.
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Roseate Tern (*Sterna dougallii*).

RINGED AS YOUNG.

No.	Ringed.	Recovered.
SS.293	Firth of Forth, 18.7.50, by Midlothian Orn. Club.	Keta, Gold Coast, 9.1.53.
PD.709	Ditto, 15.7.52.	Accra, Gold Coast, 21.1.53.
X.26184	Ditto, 29.7.52.	Ditto, 1.2.53.
X.26222	Ditto, 12.8.52.	Ditto, 31.1.53.

Sandwich Tern (*Sterna sandvicensis*).

272412	Farne Is., 10.7.52, young, by Northumb. & Durham N.H.S.	Caorle (Venezia), Italy, 28.10.52.
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There is also a record from Gibraltar, one from W. Morocco, three from Senegal and two from the Gold Coast.

Razorbill (*Alca torda*).

RINGED AS YOUNG.

AX 3410	Skokholm Bird Obs., 17.7.51.	Near Stranraer (Wigtown), -4.53 [220 m. N.].
AX.6605	Ditto, 18.6.52.	Skudenes Fjord (Rogoland), Norway, 17.11.52 [ca. 59° 8' N., 5° 23' E.].
*AX.3317	Ditto, 11.7.51.	Off Pasajes (Guipuzcoa), Spain, 10.2.52.
AV.9561	Ditto, 3.7.50.	Vilajuiga (Gerona), Spain, 10.1.53 [42° 20' N., 3° 5' E.].
AX.3374	Ditto, 13.7.51.	Cros-de-Cagnes (A.M.), France, -11.52.
AT.10216	Lundy Bird Obs., 29.6.52.	Antibes (A.M.), France, 9.12.52.
AT.10459	Ditto, 8.7.52.	Genoa, Italy, 27.2.53.
AX.8237	Ditto, 19.7.51.	Ditto, 3.3.53.
AE.1047	Mingulay, Outer Hebrides, 22.6.50, by Myles Smith.	Girvan (Ayr), -4.53.

The record marked * in the above list was included in the data of which an analysis was published earlier in 1953 (*antea*, pp. 3-16).

Guillemot (*Uria aalge*).

RINGED AS YOUNG.

AE.2250	Cruden Bay (Aberdeen), 10.7.51, by R. Carrick.	Hayling I. (Hants.), 15.3.53 [450 m. S.].
AF.5025	Ditto, 3.7.52, by H. N. Southern.	Off Eigerøy, S. Norway, 16.10.52 [58° 24' N., 5° 50' E.].
AE.2268	Ditto, 3.7.52.	Off Lillesand (Norway), 26.9.52
AF.5023	Ditto, 3.7.52.	Off Oksøy Lighthouse, S. Norway, 26.9.52 [58° 6' N., 8° 9' E.].
AX.9628	Farne Is., 8.7.52, by Northumb. & Durham N.H.S.	Ditto, 29.9.52.
AX.9633	Ditto, 8.7.52.	Færder, Oslo Fjord, Norway, 1.2.53.
AX.9654	Ditto, 9.7.52.	Norderney, E. Frisian Is., 3.1.53.

RINGED AS YOUNG.

No.	<i>Ringed.</i>	<i>Recovered.</i>
*AX.8348	Puffin I, Anglesey, 6.7.51, by Thearle & Hobbs.	Ouistreham (Calvados), France, 18.4.52.
*AX.8208	Lundy Bird Obs., 19.7.51.	Off Mimizan (Landes), France, 10.4.52.
AT.10445	Ditto, 8.7.52.	Marseilles, France, ca. 6.1.53.

RINGED AS FULL-GROWN.

AE.1347	Cape Wrath (Sutherland), 4.7.50, by I. D. Pennie.	Bokfjord, near Stavanger, Norway, 28.2.53.
AE.1309	Ditto, 4.7.50.	Near Mandal, S. Norway, 4.2.53.
AX.8067	Lundy Bird Obs., 18.7.51.	Douarnenez (Finistère), France, 25.11.52.
*AX.8105	Ditto, 18.7.51.	Penmarch (Finistère), France, 29.3.52.

The recovery at Marseilles is the first from the Mediterranean for this species : a single record from Lisbon previously marked the limit for the recovery of Guillemots ringed in the British Isles.

The records marked * in the above list were included in the data of which an analysis was published earlier in 1953 (*antea*, pp. 3-16).

Puffin (*Fratercula arctica*).

RINGED AS FULL-GROWN.

AX.5901	Skokholm Bird Obs., 28.4.52.	Blackpool (Lancs.), -7.52 [180 m. N.].
AT.5306	Skomer (Pem.), 18.7.46, by Skokholm Bird Obs.	Cobo Bay, Guernsey, 9.10.52 [190 m. S.E.].

Stock Dove (*Columba oenas*).

RINGED AS YOUNG.

361263	Near Hebden Bridge (Yorks.), 8.6.52, by Watts & McConville.	Near Wakefield (Yorks.), 28.7.52 [28 m. S.E.].
324057	Near Brent Knoll (Som.), 26.7.44, by A. E. Billett.	Where ringed, -12.52.

Woodpigeon (*Columba palumbus*).

RINGED AS YOUNG.

344396	Near Clitheroe, Lancs., 19.5.51, by J. J. Boon.	Storeton, Wirral (Ches.), 17.1.53 [44 m. S.W.].
334275	Sibford Ferris (Oxon.), 15.6.52, by A. Darlington.	Stourport (Worcs.), 18.1.53 [41 m. N.W.].
334364	Hook Norton (Oxon.), 9.7.52, by A. Darlington.	Gribben Head, near Fowey (Cornwall), 14.2.53 [180 m. S.W.].

Turtle Dove (*Streptopelia turtur*).

RINGED AS YOUNG.

353938	Maidenhead (Berks.), 17.7.51, by J. Field.	Soulac-sur-Mer (Gironde), France, 22.5.52.
303771	Winchester (Hants.), 7.6.50, by Winchester College N.H.S.	Estoril, near Lisbon, Portugal, 1.9.52.

Barn Owl (*Tyto alba*).

RINGED AS YOUNG.

No.	Ringed.	Recovered.
341820	Woodstock (Oxon.), 7.6.51, by B. Campbell.	Near Rochester, Kent, 25.10.52 [80 m. E.S.E.].
AE.9046	Fordingbridge (Hants.), 22.6.52, by Ash & Ridley.	Hampstead Norris (Berks.), 1.2.53 [43 m. N.N.E.].

Little Owl (*Athene noctua*).

RINGED AS YOUNG.

333225	Near Pool-in-Wharfedale (Yorks.), 4.6.51, by Wharfedale Nat. Soc.	Doneaster (Yorks.), 16.4.52 [34 m. S.E.].
339455	Sibford Ferris (Oxon.), 11.6.52, by A. Darlington.	Hursley (Hants.), 16.12.52 [70 m. S.].
332581	Thorpe (Surrey), 30.6.47, by D. Goodwin.	Near Wells (Som.), 7.4.52 [95 m. W.].

Tawny Owl (*Strix aluco*).

AE.8908	Budle (Northumb.), 7.5.52, young, by Monks' House Bird Obs.	Wamphray (Dumfries), 4.11.52 [70 m. W.S.W.].
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Short-eared Owl (*Asio flammeus*).

RINGED AS YOUNG.

AF.5182	Barr (Ayr), 5.7.52, by G. Hughes-Onslow.	Near Ramsbottom (Lanes.), 17.10.52 [140 m. S.E.].
AE.5361	Ditto, 26.5.52.	Near Benavente (Zamora), Spain, 22.9.52 [42° 0' N., 5° 40' W.].
AE.5882	Straiton (Ayr), 19.6.52, by G. Hughes-Onslow.	Near Troon (Ayr), 17.10.52 [22 m. N.N.W.].

Swift (*Apus apus*).

NS.227	Oxford, 7.8.51, young, by Edward Grey Inst.	Jutland, Denmark, 17.7.52.
DN.73	Repton (Derby), 12.6.45, ad., by Repton Seh.	Burton-on-Trent (Staffs.), 28.6.52.

The bird reported from Denmark was caught in the air-intake of an aircraft, flying between Aalborg and Karup.

Skylark (*Alauda arvensis*).

NR.663	Cley Bird Obs. (Norfolk), 31.8.51, full-grown.	Near Créon (Gironde), France, 15.3.53.
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Swallow (*Hirundo rustica*).

RINGED AS YOUNG.

L.1941	Bourne End (Bucks), 19.7.50, by Thearle and Hobbs.	Near Bordeaux, France, 20.10.52.
KK.181	Torrance (Stirling), 17.7.52, by J. Bartholomew.	Off Cape Spartel, Western Moroeco, 22.9.52.

Of others ringed as young, 6 were recovered near the respective places of marking in their second year and 2 in their third.

Of birds ringed as breeding adults, 4 were recovered at the places of marking in subsequent years: 2 of these were mated on both occasions, and another was caught in four successive seasons (including that of ringing).

House Martin (*Delichon urbica*).

- | No. | Ringed. | Recovered. |
|--------|--|--|
| J.0268 | Oundle (Northants.), 23.7.50,
young, by Oundle Sch. | Near Chantilly (Oise),
France, 20.9.52. |

Raven (*Corvus corax*).

- | | | |
|--------|--|---|
| 408527 | Mourne Mts. (Down), 15.4.52,
young, by J. A. Benington. | Cleggan (Antrim), 11.10.52
[50 m. N.]. |
|--------|--|---|

Carrion Crow (*Corvus corone*).

- | | | |
|--------|--|---|
| 361781 | Sedbergh (Yorks.), 6.6.52, young
by Sedbergh Sch. | Arncliffe, Upper Wharfedale,
31.1.53 [20 m. S.E.]. |
| 333057 | Blythe Bridge (Staffs.), 14.5.51,
young, by P. V. Robinson. | Derby, 11.1.53 [25 m.
E.S.E.]. |

Rook (*Corvus frugilegus*).

- | | | |
|--------|--|---|
| 362166 | Burnsall (Yorks.), 3.5.52, young,
by Holmes, Hutton and
Chippendale. | Northallerton (Yorks.),
13.11.52 [30 m. N.E.]. |
| 362099 | Ditto, 27.4.52. | Cummertrees (Dumfries),
24.10.52 [83 m. N.W.]. |

Jackdaw (*Corvus monedula*).

- | | | |
|--------|---|---|
| 368220 | Settle (Yorks.), 10.7.52, juv., by
Davis and Iles. | Birkenhead (Ches.), -3.53
[55 m. S.S.W.]. |
| 363982 | Blandford (Dorset), 22.7.52, juv.,
by Bryanston Sch. | Egloskerry (Cornwall),
3.1.53 [100 m. W.S.W.]. |

Magpie (*Pica pica*).

- | | | |
|--------|--|--|
| 358742 | Horsforth (Yorks.), 19.5.51, young,
by Holmes, Hutton and
Chippendale. | Ravenstonedale (West-
mor.), ca. 17.6.52 [54 m.
N.W.]. |
|--------|--|--|

Great Tit (*Parus major*).

- | | | |
|--------|---|---|
| MS.998 | Sedbergh (Yorks.), 9.3.52, ad., by
Sedbergh Sch. | Cottingham (Yorks.) 6.4.52
[95 m. S.E.]. |
|--------|---|---|

Blue Tit (*Parus cæruleus*).

- | | | |
|--------|---|---|
| J.9655 | Wytham, Oxford, -6.51, young,
by Edward Grey Inst. | Near Winslow (Bucks.),
1.12.52 [21 m. N.E.]. |
|--------|---|---|

RINGED AS FULL-GROWN.

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|--------|--|--|
| LD.205 | Dumfries, 23.11.52, by I. F.
Stewart. | Sanquhar (Dumfries),
26.3.53 [23 m. N.N.W.]. |
| M 6824 | Nibthwaite (Lancs.), 30.3.51, by
L. A. Cowcill. | Barrow-in-Furness, 3.2.53
[14 m. S.]. |
| E.8573 | Shrewsbury (Salop), 16.2.51, by
Shrewsbury Sch. | Llandrinio (Mont.), ca.
20.2.53 [13 m. W.N.W.]. |

Dipper (*Cinclus cinclus*).

- | | | |
|--------|---|--|
| 268917 | Stonyhurst (Lancs.), 14.5.52,
young, by Watts and
McConville. | Preston (Lancs.), 29.6.52
[12 m. S.W.]. |
|--------|---|--|

Mistle Thrush (*Turdus viscivorus*).

RINGED AS YOUNG.

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|--------|---|--|
| 259702 | Burley-in-Wharfedale (Yorks.),
10.4.52, by Wharfedale Nat.
Soc. | Shackleford (Surrey),
30.11.52 [185 m. S.S.E.]. |
|--------|---|--|

RINGED AS YOUNG.

No.	Ringed.	Recovered.
256733	Ewhurst (Surrey), 5.5.52, by L. G. Weller.	Hermanville (Calvados), France, ca. 1.2.53.
266683	Lisburn (Antrim), 19.4.52, by J. A. Benington.	Ballywalter (Down), 1.4.53 [23 m. E.].

Song Thrush (*Turdus ericetorum*).

RINGED AS YOUNG.

SM.456	Farr (Inverness), 25.5.52, by Mrs. Knowles.	Drumnadrochit (Inverness), ca. 15.10.52 [16 m. S.W.].
P.6626	Dundee (Angus), 6.5.52, by G. B. Corbet.	Tannadice (Angus), 10.9.52 [18 m. N.].
X.12908	Salthouse (Norfolk), 4.6.52, by P. R. Clarke.	Manton (Rutland), 24.11.52 [80 m. W.S.W.].
12766	Burford (Oxon.), 15.5.50, by London N.H.S.	Dawlish (Devon), 12.1.53 [115 m. S.W.].
PP.784	Near Aberdeen, 9.7.51, by R. Carrick.	Hackballscross (Louth), 1.12.52.
PP.936	Ditto, 11.6.50.	Borrisokane (Tipperary), 10.11.52.
T.9137	Muthill (Perths.), 12.5.50, by A. Cross.	Larne (Antrim), 19.12.52.
S.6813	Ackworth (Yorks.), 1.6.52, by Ackworth School.	Hourtin (Gironde), France, 23.12.52.
S.5402	Near Blandford (Dorset), 5.5.51, by Clayesmore School.	Portbail (Manche), France, 14.12.52.

RINGED AS FULL-GROWN.

PX.719	I. of May Bird Obs., 19.3.52.	Penshaw (Durham), 4.12.52 [100 m. S.S.E.].
PA.604	Hebden Bridge (Yorks), 31.5.52, by Halifax Sci. Soc.	Kirkbride (Cumb.), 28.9.52 [95 m. N.W.].
PS.963	Spurn Bird Obs., 30.8.52.	Gibraltar Point (Lincs.), 5.9.52 [35 m. S.].
P.5437	Uppingham (Rutland), 17.7.52, by Uppingham School.	Near Frome (Som.), 30.12.52 [120 m. S.W.].
R.8445	Lundy Bird Obs., 20.2.52.	Near Burton-on-Trent Staffs), 20.9.52 [170 m. N.E.].
S.2888	Saltec Bird Obs. (Wexford), 2.11.51.	Near Leeds (Yorks), 12.4.53.
X.23396	Masham (Yorks.), 3.8.52, by R. Chislett.	Bray (Wicklow), ca. 15.12.52.
P.1541	Leiccester, 7.5.52, by Leics. & Rutland N.H.S.	Clarecastle (Clare), 16.12.52.
X.1742	Brent Knoll (Som.), 21.2.47, by E. G. Holt.	Lc Zoutc (West Flanders), Belgium, 11.4.52.
V.6567	Cholsey (Berks.), 18.7.52, by Oxford Orn. Soc.	Ile de Batz (Finistère), France, 3.2.53.
R.5081	Monks' House Bird Obs. (Northumb.), 17.10.51.	Lége (Gironde), France, 15.12.51.
RA.642	Spurn Bird Obs., 11.10.51.	Near St. Ciers (Gironde), France, 22.2.53.
24410	Gibraltar Point Bird Obs., 20.11.49.	Near Bordeaux (Gironde), France, 7.2.53.
S.1911	Spurn Bird Obs., 3.10.51.	Grenade sur Adour (Landes), France, 25.3.52 [43° 47' N., 0° 25' W.].

RINGED AS FULL-GROWN.

No.	<i>Ringed.</i>	<i>Recovered.</i>
PJ.777	Fair Isle Bird Obs., 1.10.51.	Maliaño (Santander), Spain, 24.11.52.
PX.847	Isle of May Bird Obs., 15.10.52.	Oporto, Portugal, 18.1.53.
R.1297	Dungeness (Kent), 18.10.52, by J. Field.	Near Madrid, Spain, 1.12.52.
Redwing (<i>Turdus musicus</i>).		
P.3442	Monks' House Bird Obs. (North- umb.), 29.1.52.	Longstanton (Cambs.), -.1.53 [230 m. S.S.E.].
PJ.012	Fair Isle Bird Obs., 21.10.50.	Gnesta (Södermanland), Sweden, 14.4.52.
X.28028	Dungeness Light (Kent), 19.10.52, by J. Field.	Mérignac (Charente), France, -.2.53.
X.28021	Ditto, 19.10.52.	Anglet (Basses Pyrénées), France, 19.1.53.
PX.724	Isle of May Bird Obs., 5.4.52.	Gijon (Asturias), Spain, 6.1.53.
R.7326	Fair Isle Bird Obs., 10.5.52.	Celorico de Basto, North Portugal, ca. 20.1.53 [41° 25' N., 8° 0' W.].

There is no proof that the birds recovered in Spain and Portugal migrated by way of Great Britain in the *autumn* of 1952.

Blackbird (*Turdus merula*).

RINGED AS YOUNG.

W.9811	Near Otley (Yorks.), 9.5.51, by Davis & Iles.	Castlewellan (Down), 6.2.53.
P.6226	Ditto, 11.5.52.	Dingle (Kerry), 9.1.53.
R.4950	Chartley (Staffs.), 17.5.52, by A. H. Johnson.	Glanconway (Denbigh.), 12.11.52 [80 m. W.N.W.].
SX.131	Gibraltar Point Bird Obs., 15.5.51.	Ballina (Mayo), 13.12.52.
PM.481	Avoch (Ross.), 19.5.51, by J. Lees.	Carolinensiel (Ostfries- land), Germany, -.2.53.

RINGED AS FULL-GROWN.

PJ.406	Fair Isle Bird Obs., 3.4.51.	Near Newton Stewart (Kirkcudbright), 8.4.52.
PJ.827	Ditto, 16.10.51.	Girvan (Ayr), 25.12.52.
PJ.172	Ditto, 27.10.50.	Near Leighton Buzzard (Beds.), -.11.52.
PX.328	I. of May Bird Obs., 29.10.51.	Eeeleshall (Staffs.), 3.1.53.
PS.668	Spurn Bird Obs., 7.10.52.	Echt (Aberdeen), 9.3.53 [245 m. N.N.W.].
19847	Ditto, 12.11.52.	Barrow-in-Furness (Lancs), 18.1.53 [140 m. W.N.W.].
RA.555	Ditto, 30.6.51.	Gibraltar Point (Lincs.), 27.6.52 [38 m. S.].
24335	Gibraltar Point Bird Obs., 30.10.49.	Newport (Salop.), -.3.53 [120 m. W.S.W.].
X.8946	Lundy Bird Obs., 19.2.52.	Near Chesterfield (Derby), 6.4.52 [200 m. N.E.].
T.8651	Tongue (Sutherland), 12.12.50, by I. D. Pennie	Ellon (Aberdeen), 10.10.52 [112 m. S.E.].
S.6885	Holt (Norfolk), 14.7.51, by R. W. Kew.	Preston Bissett (Bucks.), 15.12.51 [110 m. S.W.].
R.7354	Fair Isle Bird Obs., 20.10.52.	Lorha (Tipperary), 3.1.53.

RINGED AS FULL-GROWN.

No.	Ringed.	Recovered.
16545	Isle of May Bird Obs., 25.10.50.	Near Kilkeel (Down), 9.10.52.
R.6026	Ditto, 14.10.52.	Miltown Malbay (Clare), -12.52.
PS.914	Spurn Bird Obs., 22.3.52.	Cappoquin (Waterford), 11.2.53.
PS.811	Ditto, 15.10.52.	Buttevant (Cork), ca. 10.3.53.
PS.806	Ditto, 14.10.52.	Cloyne (Cork), 10.1.53.
PR.329	Gibraltar Point Bird Obs., 7.11.52.	Ballyjamesduff (Cavan), -12.52.
X.23435	Masham (Yorks.), 27.8.52, by R. Chislett.	Near Roscommon, ca. 25.1.53.
R.0947	Oundle (Northants.), 11.12.51, by Oundle School.	Near Middelfart (Fyn), Denmark, 16.4.52.
PK.343	Goxhill (Lincs.), 5.1.53, by H. Van den Bos.	Near Dybbøl (South Jut- land), Denmark, 18.3.53 [54° 56' N., 9° 43' E.].
RA.684	Spurn Bird Obs., 13.10.51.	Near Bremen, Germany, 3.4.52.

There are in addition 19 records from Norway, mainly from its southern parts, of birds ringed at Fair Isle, the Isle of May and elsewhere, in most cases presumably on migration.

The recovery in Germany of a Blackbird ringed in Britain as a nestling is the first occurrence of the kind.

Wheatear (*Enanthe aenanthæ*).

RINGED AS YOUNG.

LX.147	Cheviot Hills (Northumb.), 6.6.52, by Monks' House Bird Obs.	Capbreton (Landes), France, 24.8.52.
ML.367	Fair Isle Bird Obs., 21.6.52.	Ditto, 15.9.52.
J.8898	Ulpha (Cumb.), 13.6.50, by R. H. Brown.	Contis-les-Bains (Landes), France, 24.8.52.
LH.018	Skokholm Bird Obs., 2.6.52.	Puerto de S. Maria (Cadiz), Spain, 26.9.52.

RINGED AS FULL-GROWN.

M.2103	Fair Isle Bird Obs., 18.7.51.	Near Macedo de Cava- leiros, N. Portugal, 9.10.52 [ca. 41° 20' N., 7° 20' W.].
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Whinchat (*Saxicola rubetra*).

LK.769	Near Killin (Perth), 10.6.52, young, by W. J. Eggeling.	Chantonay (Vendée), France, 4.9.52.
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Redstart (*Phœnicurus phœnicurus*).

MR.466	Sabden (Lancs.), 1.6.52, young, by J. J. Boon.	Read (Lancs.), 3.5.53 [2 m. S.].
NC.491	Kielder (Northumb.), 8.6.52, young, by Northumb. & Durham N.H.S.	Near Viseu, Portugal, ca. 16.9.52.
JD.221	Gibraltar Point Bird Obs., 12.9.52 migrant.	Mazan (Vaucluse), France, 5.10.52.

Of Redstarts ringed in Gloucestershire by Dr. Bruce Campbell, 3 ringed as young and 2 ringed as adult females were recovered in the following year, and one of each also in the year after that, at the place of marking.

Black Redstart (*Phœnicurus ochrurus*).

No.	Ringed.	Recovered.
B.4570	Near Rye (Sussex), 3.7.47, young, by Brooker & Cawkell.	Dover (Kent), 21.6.52 [31 m. N.E.].

Nightingale (*Luscinia megarhyncha*).

NJ.945	Weybourne (Norfolk), 10.6.51, young, by P. R. Clarke.	Portimão (Algarve), Portugal, 25.9.52.
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Robin (*Erithacus rubecula*).

MS.597	Bishop's Stortford (Herts.), 8.5.52, young, by A Darlington.	Yvrae (Gironde), France, 9.9.52 [44° 54' N., 0° 30' W.].
LP.767	Hythe (Kent), 7.5.52, young, by D. F. Harle.	Capbreton (Landes), France, 11.2.53.

RINGED AS FULL-GROWN.

MC.007	South Shields (Durham), 19.9.51, by J. C. Coulson.	Darlington (Durham), 10.7.52 [33 m. S.].
MJ.135	Spurn Bird Obs., 3.10.52.	Hastings (Sussex), 8.1.53 [200 m. S.].
NL.925	St. Mary's Bay (Kent), 31.12.51, by R. G. Williams.	Andover (Hants.), summer 1952 [108 m. W.].
NB.298	Loanhead (Midlothian), 21.12.52, by Smith & Walker.	Nyborg (Fyen), Denmark, -3.53.
NR.724	Cley Bird Obs., 1.10.51.	Kloppenbug (Oldenburg), Germany, 28.3.52.
L.9722	Gibraltar Point Bird Obs., 1.10.51.	Marek (Pas - de - Calais), France, ca. 20.1.53.
L.0789	Isle of May Bird Obs., 5.10.51.	Sardoal, S. Portugal, -3.52 [39° 34' N., 8° 10' W.].

Reed Warbler (*Acrocephalus scirpaceus*).

KA.217	Slough (Bueks.), 14.6.52, young, by J. Field.	Near Petersfield (Hants.), 5.8.52 [45 m. S.S.W.].
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Blackcap (*Sylvia atricapilla*).

M.9641	Ewhurst (Surrey), 23.5.51, young, by L. G. Weller	Barns Green (Sussex), 17.6.52 [10 m. S.].
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Whitethroat (*Sylvia communis*).

RINGED AS YOUNG.

J.7976	Lancaster, 1.6.50, by T. P. Wells.	Near where ringed, 8.5.52.
LK.546	Upminster (Essex), 2.6.52, by R. Spencer.	Logroño, Spain, 23.8.52.

RINGED AS FULL-GROWN.

NW.296	Lundy Bird Obs., 5.5.52.	Listowel (Kerry), 24.7.52.
LS.129	Ewhurst (Surrey), 17.7.52, by L. G. Weller.	Bourg (Gironde), France, 7.10.52.

RINGED AS FULL-GROWN.

No.	Ringed.	Recovered.
<i>Private Ring</i>	Skokholm Bird Obs., 17.5.49.	Macedo de Cavaleiros, Portugal, ca. 28.9.52 [41° 20' N., 7° 20' W.].
MN.031	Lundy Bird Obs., 8.9.52.	Bragança, Portugal, ca. 24.9.52.
N.9513	Saltee Bird Obs., 12.5.51.	Mirandela, Portugal, -9.52.

Willow Warbler (*Phylloscopus trochilus*).

J.2003	Goring (Oxon.), 21.7.52, young, by Oxford Orn. Soc.	Near Knebworth (Herts.), 12.8.52 [48 m. N.E.].
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RINGED AS FULL-GROWN.

MC.388	Gibraltar Point Bird Obs., 9.4.52.	Châtellerault (Vienne), France, 28.7.52.
MH.585	Spurn Bird Obs., 14.8.52.	Ondres (Landes), France, 19.9.52 [43° 34' N., 1° 26' W.].
N.9310	Saltee Bird Obs. (Wexford), 3.10.51.	Ditto, 10.10.52.
MC.689	Gibraltar Point Bird Obs., 15.8.52.	Torrelavega (Santander), Spain, -10.52.
MB.219	Spurn Bird Obs., 1.10.51.	Tougourt Dist., Algeria, 15.2.52 [33° 30' N., 6° 58' E.].

Wood Warbler (*Phylloscopus sibilatrix*).

LF.503	I. of May Bird Obs., 12.7.52, adult.	Fondouk, near Algiers, 8.4.53.
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Goldcrest (*Regulus regulus*).

LV.089	I. of May B.O., 23.10.52, migrant.	Near Segeberg, Holstein, Germany, 8.2.53.
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Spotted Flycatcher (*Muscicapa striata*).

RINGED AS YOUNG.

N.7947	Glenorchard (Stirling), 27.6.51, by J. Bartholomew.	Par (Cornwall), 17.5.52 [390 m. S.].
KN.008	Ditto, 1.8.52.	Logroño, Spain, 3.10.52.
KF.516	Kendal (Westmor.), 27.6.52, by A. Whiteside.	Tarkwa, Gold Coast, 31.10.52.

RINGED AS MIGRANT.

LR.069	Saltee Bird Obs., (Wexford), 12.9.52.	Cadiz, Spain, 21.10.52.
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Pied Flycatcher (*Muscicapa hypoleuca*).

KE.017	Ullswater (Westmor.), 18.6.52, young, by F. C. Gribble.	San Sebastian, Spain, -8.52.
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Meadow Pipit (*Anthus pratensis*).

RINGED AS YOUNG.

ML.338	Fair Isle Bird Obs., 20.6.52.	Biganos (Gironde), France, 25.9.52.
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RINGED AS YOUNG.

No.	Ringed.	Recovered.
LK.835	Burley-in-Wharfedale (Yorks.), 3.6.52, by Wharfedale Nat. Soc.	St. Geours de Marenne (Landes), France, 10.10.52.
LX.021	Monks' House Bird Obs., 26.5.52.	Sangalhos, Portugal, 2.1.53 [40° 31' N., 8° 28' W.].

RINGED AS FULL-GROWN.

ML.822	Fair Isle Bird Obs., 21.8.52.	Den Helder, Noord Holland, 11.2.53.
ML.882	Ditto, 28.8.52.	Near Guitres (Gironde), France, 12.10.52.
ML.630	Ditto, 5.8.52.	Near Seville, Spain, --.1.53.
L.0576	I. of May Bird Obs., 6.9.51.	Near Evora, S. Portugal, 18.1.53.

Rock Pipit (*Anthus spinoletta*).

RINGED AS FULL-GROWN.

KW.325	Saltee Bird Obs., (Wexford), 21.9.52.	Dungarvan (Waterford), 5.1.53.
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Pied Wagtail (*Motacilla alba yarrellii*).

RINGED AS YOUNG.

KE.349	Near Settle (Yorks.), 9.7.52, by Davis & Iles.	Sandown, I. of Wight, 10.1.53.
ND.580	Whalley (Lancs.), 7.7.51, by J. J. Boon.	Almonte (Huelva), Spain, 10.2.52.
KL.414	Colchester (Essex), 3.7.52, by C. B. Wainwright.	Valencina de la Concep- cion (Seville), Spain, 27.10.52.
KP.385	Ditto, 13.7.52.	Chaves, N. Portugal, 24.12.52.

RINGED AS FULL-GROWN.

LB.490	Halifax (Yorks.), 30.3.52, by Halifax Sci. Soc.	Grandola, S. Portugal, ca. 11.2.53 [38° 9' N., 8° 35' W.].
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Yellow Wagtail (*Motacilla flava flavissima*).

N.6697	Halifax (Yorks.), 12.8.51, imm., by Halifax Sci. Soc.	Where ringed, 27.8.52.
KD.067	Salthouse (Norfolk), 8.6.52, young, by P. R. Clarke.	Cap Ferret (Gironde), France, --.8.52.
KL.487	Colchester (Essex), 6.7.52, young, by C. B. Wainwright.	Vendas Novas, S. Portugal ca. 20.1.53 [38° 41' N., 8° 26' W.].

Lesser Grey Shrike (*Lanius minor*).

P.5177	Monks' House Bird Obs. (North- umb.), 14.9.52, migrant.	Aberdeen, 15.10.52 (<i>vide</i> <i>antea</i> , p. 220).
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Starling (*Sturnus vulgaris*).

RINGED AS YOUNG.

PK.599	Chester-le-Street (Durham), 29.5.52, by J. C. Coulson.	Campbeltown (Argyll), 15.11.52 [170m. W.N.W.].
P.2645	Bishops Stortford (Herts.), 6.5.52, by A. Darlington.	Breaston (Derby), 25.11.52 [95 m. N.W.].

VOL. XLVI.] **REPORT ON BIRD-RINGING FOR 1952.** 327RINGED AS FULL-GROWN AND RECOVERED IN (PRESUMED) BREEDING AREA
ABROAD.

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
W.3090	Scarborough (Yorks.), 1.1.51, by A. Wallis.	Leningrad, Russia, -8.51.
SR.359	Shipston-on-Stour (Warwicks.), 12.11.49, by C. A. Norris.	Kalinin Prov., Russia, 24.3.51 [57° 7' N., 38° E]
19028	Stewkley (Bucks.), 1.1.50, by R. F. Dickens.	Smolensk, W. Russia, 30.4.50.
W.4016	Thornaby - on - Tees (Yorks.), 23.1.51, by P. A. Rayfield.	Sieradz, Poland, 11.8.51 [51° 29' N., 18° 51' E.].
SE.693	York, 15.3.50, by Bootham Sch.	Sztum, N. Poland, 11.8.51 [53° 55' N., 19° 3' E.].
W.4358	Liverpool (Lancs.), 18.2.51, by Huyton & Low.	Koczala, N. Poland, 26.4.51 [53° 40' N., 17° 22' E.].
PA.413	Bartley (Hants.), 11.2.51, by R. Elmes.	Zydowo, N. Poland, 30.4.51 [54° 12' N., 19° 45' E.].
PB.141	Crewe (Ches.), 6.12.50, by F. J. Brown.	Labiau [formerly E. Prussia], 29.7.51 [54° 51' N., 21° 8' E.].
16345	Isle of May Bird Obs., 22.10.50.	Kymi, S. Finland, 3.5.52 [60° 30' N., 27° E.].
X.9070	Wellington (Salop.), 4.11.51, by E. Watkiss.	Klippan, S. Sweden, -5.52 [56° 7' N., 13° 11' E.].
W.5566	York, 29.1.52, by Bootham Sch.	Vara (Västergötland), Sweden, 26.4.52.
P.0654	Ditto, 3.3.52.	Vangsnes(Sogne), Norway, 4.4.52.
P.1069	Ditto, 22.12.52.	Hareid, Norway, 2.4.53 [62° 28' N., 6° 5' E.].
PT.616	South Shields (Durham), 29.12.50, by J. C. Coulson.	Larsnes, Norway, 21.5.52 [62° 12' N., 5° 37' E.].
PP.372	Torphins (Aberdeen), 26.1.52, by R. Carrick.	Fister (Ryfylke), Norway, -5.52.
16311	Isle of May Bird Obs., 22.10.50.	Bore i Klepp, S. Norway, 25.8.52 [58° 48' N., 5° 36' E.].
12497	York, 23.1.49, by A & M. White.	Hönefoss, Norway, 9.4.52 [60° 10' N., 10° 17' E.].
16308	Isle of May Bird Obs., 22.10.50.	Near Bergen, Norway, 15.7.52.
P.0121	Near York, 16.12.51, by Bootham Sch.	Nærbö, S. Norway 28.4.42 [58° 39' N., 5° 38' E.].
R.0930	Oundle (Northants.), 7.12.51, by Oundle Sch.	NearMünster(Westphalia), Germany, 6.6.52.
SR.547	Crewe (Ches.), 30.10.50, by F. J. Brown.	Aurich (Ostfriesland), Germany, -7.52.
RL.161	York, 10.12.50, by Bootham Sch.	Elmshorn, Schleswig-Holstein, 29.6.52.
RL.199	Ditto, 16.12.50.	Satrup, Schleswig-Holstein, 26.6.52.
PT.339	Leeds (Yorks.), 5.1.51, by J. Govett.	Jever (Oldenburg), Germany, ca. 1.6.52.
SX.371	Stewkley (Bucks.), 31.12.50, by R. F. Dickens.	Near Nordenham (Oldenburg), Germany, 9.6.52.

RINGED AS FULL-GROWN AND RECOVERED IN (PRESUMED) BREEDING AREA ABROAD.

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
PS.484	York, 10.12.50, by J.W. Brennan.	Bremen, Germany, 2.4.52.
W.6498	Breaston (Derby), 6.1.52, by J. Crompton.	Ditto, 4.5.52.
W.3301	Bebington (Cheshire), 27.1.51, by W. T. C. Rankin.	Sorø, Zealand, Denmark, 8.8.52.
SX.798	Sheringham (Norfolk), 16.10.50, by P. R. Clarke.	Wedde (Groningen), Holland, 12.4.52.
RB.829	Pembroke, 29.12.49, by C. G. Cartwright.	Leeuwarden (Friesland), Holland, 26.6.52.
SW.367	Sibford Ferris (Oxon.), 9.11.51, by A. Darlington.	Suawoude (Friesland), Holland, 27.5.52.
RL.219	Quorn (Leics.), 21.1.51, by P. H. Gamble.	Beilen (Drente), Holland, 1.6.52.
V.5520	Wroxham (Norfolk), 24.12.50, by P. F. Hill.	Schagerbrug, Noord Holland, 7.4.52.
PT.678	Flixton (Lancs.), 10.12.50, by A. E. Male.	Anna Paulowna, Noord Holland, 2.4.52.
W.6638	Stewkley (Bucks.), 4.1.52, by R.F. Dickens.	Rotterdam, Holland, 5.7.52.
R.0929	Oundle (Northants.), 6.12.51, by Oundle Sch. (Previously marked with a Leiden Museum ring on 8.7.51 near The Hague).	Near The Hague, Holland, 27.4.52.

Other records from Belgium, Holland, Germany and Denmark are for dates which make it uncertain whether the birds were in their breeding area. Winter records from British localities are likewise difficult to interpret where there is no clue to the breeding area of the particular birds.

RINGED ON MIGRATION OR IN WINTER AND RECOVERED IN FRANCE.

R.2371	Stalbridge (Dorset), 27.2.52, by Clayesmore Sch.	Cap Gris Nez. (P. de C.), France, 26.10.52.
X.17406	Dungeness Lighthouse (Kent), 19.10.52, by J. Field.	Near Le Havre (Seine Inf.), France, 27.10.52.
10230	Cleveleys (Lancs.), 20.12.48, by R. M. Band.	Near Coutances (Manche), France, -.11.52.

There are only 2 previous records of this kind ; including one from Guernsey.

RINGED AS FULL-GROWN AND RECOVERED IN IRELAND.

X.21450	Cleveleys (Lancs.), 12.10.52, by R. M. Band.	Portumna (Galway), 14.2.53.
X.20971	Scarborough (Yorks.), 7.11.52, by A. Wallis.	Moydow (Longford), -.2.53.
X.9028	Wellington (Salop.), 22.1.50, by E. Watkiss.	Enniskillen (Fermanagh), 2.12.52.
17397	Breaston (Derby), 26.2.50, by J. Allen.	(1) Kilcock (Kildare), 22.5.51 (caught and released). (2) Rothwell(Northants), 40 miles S.E. of place of ringing, 12.11.52.

The first recovery of this last bird was referred to in the Report for 1950.

Greenfinch (*Chloris chloris*).

RINGED AS FULL-GROWN.

No.	Ringed.	Recovered.
R.9242	Monks' House Bird Obs. (North-umb.), 5.12.51.	Near North Shields (North-umb.), 3.3.52 [44m. S].
R.5183	Ditto, 2.11.51.	Whitby (Yorks), 11.6.52 [88 m. S.E.].
R.9291	Ditto, 14.12.51.	Near Blackpool (Lancs.), 11.5.52 [135 m. S.S.W.].
P.6925	High Wycombe (Bucks.), 30.3.52, by Thearle, Hobbs & Goring.	Witham (Essex) 3.6.52 [63 m. E.N.E.].
P.6573	Dublin, 14.3.52, by S. M. D. Alexander.	Colwyn Bay (Denbigh), 14.4.52.

Linnet (*Carduelis cannabina*).

RINGED AS YOUNG.

NE.0089	Cranborne, Dorset, 10.6.51, by Ash & Ridley.	Near Bordeaux (Gironde), France, 30.10.52.
NK.101	Burford (Oxon.), 31.5.51, by London N.H.S.	Ditto, 2.11.52.
J.8354	Near Ilkley (Yorks.), 7.6.52, by J. K. Fenton.	Orgueil (Tarn et Garonne), France, 17.10.52 [ca. 43° 55' N., 1° 25' E.].
LM.866	Near Fordingbridge (Hants.), 20.5.52, by Ash & Ridley.	Parentis-en-Born (Landes), France, 17.10.52.
LD.403	Holt, Norfolk, 28.6.52, by G. H. Byford.	Dept. of Landes, France, 23.10.52.

RINGED AS FULL-GROWN.

MF.897	Spurn Bird Obs., 25.8.52.	Bezons (Seine et Oise), France, -1.53.
MB.624	Ditto, 28.9.51.	Châtellerault (Vienne), France, 7.1.53.
H.1579	Ditto, 29.8.50.	Agen (Lot et Garonne), France, 10.3.52.
JF.023	Ditto, 22.9.52.	Capbreton (Landes), France, -10.52.
KE.682	Cley Bird Obs., 12.6.52.	Labouheyre (Landes), France, 28.10.52 [44° 13' N., 0° 55' W.].
MH.437	Spurn Bird Obs., 31.7.52.	Echalar (Navarre), Spain, 15.10.52 [43° 14' N., 1° 37' W.].

Chaffinch (*Fringilla cœlebs*).

CS.532	Dartford (Kent), 20.5.52, young, by London N.H.S.	Brentwood (Essex), 3.1.53 [13 m. N.].
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RINGED AS FULL-GROWN.

H.5942	Long Ashton, Bristol, 26.1.52, by G. E. Clothier.	Skillingaryd, Småland, Sweden, 23.4.52 [ca. 57° 25' N., 14° 10' E.].
MT.761	Frankley (Worcs.), 29.1.52, by Wolton & Mead-Briggs.	Near Ghent (East Flanders), Belgium, -10.52
MK.603	Saltee Bird Obs. (Wexford), 7.11.51.	Comblain-la-Tour (Liège), Belgium, 11.10.52.

Brambling (*Fringilla montifringilla*).

RINGED AS FULL-GROWN.

No.	Ringed.	Recovered.
F.7110	Saffron Walden (Essex), 22.2.50, by A. Darlington.	Where ringed, 20.1.52.
N.8425	Ditto, 21.1.52.	Near Turnhout (Antwerp), Belgium, 12.10.52.
F.4216	Spurn Bird Obs., 24.10.49.	Near Tongres (Limbourg), Belgium, 19.10.52.

**STUDIES OF SOME SPECIES RARELY
PHOTOGRAPHED.****LI. ARCTIC WARBLER.***Photographed by P. O. SWANBERG AND CAPT. J. H. MCNEILE.*

(Plates 48-55)

P. O. SWANBERG obtained these unique photographs of the little-studied Arctic Warbler (*Phylloscopus borealis*) in 1952 in Swedish Lapland which is the north-western outpost in this bird's breeding-range. The typical race, often known as Eversmann's Warbler, nests from there right across N. Asia, being replaced by other forms in Kamchatka, the N. Pacific islands and Alaska (which is in practice the "eastern" outpost) where it is known as Kennicott's Willow Warbler. To the north throughout most of its range the species breeds as far as the tree limit; to the south in Scandinavia it has not been found nesting below the Arctic Circle, and in Russia and west Siberia its summer range does not extend further down than about 61 degrees (roughly the latitude of Shetland), but beyond the Yenisei it reaches much further south to N. Mongolia, to Korea and Japan. This lopsided breeding-distribution is more understandable when one remembers that the entire winter-quarters of the whole species are concentrated almost exclusively in Siam, Indo-China, Malaya and the Malay Archipelago (*vide* C. B. Ticehurst, *A systematic review of the genus Phylloscopus*, 1938). The continued adherence to this restricted winter range is remarkable for a species whose breeding area has become extended to the extremes of the N. Palearctic because, as B. W. Tucker commented (in A. C. Bent, *U.S. Nat. Mus. Bull.* 196, p. 333), "the European birds have not adopted what might seem the natural course of migrating for the winter to Africa." The result is an extraordinary migration and in view of the direction of it it is not surprising that the species has been recorded in Britain less than 20 times, while other birds such as the northern forms of the Bluethroat (*Luscinia s. svecica*) and of the Willow Warbler (*P. trochilus acredula*), which breed in similar areas of Arctic Scandinavia but which winter in Africa, occur regularly.

C. F. Lundevall (*Fair Isle Bird Obs. Bull.*, no. 9 (1953), p.8) says that "many records in the last few years . . . point to an increase in north Finland and northern Scandinavia since 1900." Yet the exact status is not at all perfectly known. This is partly on account of the inconstant reoccupation of breeding areas, a characteristic of Arctic birds which are dependent upon the favourability of spring weather conditions and also a feature of birds on the fringe of their breeding range, and partly because the vast areas concerned are so little worked by ornithologists. Swanberg (*Vår Fågelvärld* (1953), 12, pp. 49-78) suggests that the species "breeds yearly in the northern part of Swedish Lapland," but he is only able to cite 3 records, including his own, and some authors do not consider the first two of these definitely confirmed.

The Arctic Warbler, though fairly adaptable, is primarily a bird of the birch forests. Arboreal in its habits—more like the Wood Warbler (*P. sibilatrix*) than the Willow Warbler in this respect—it keeps to the canopy much of the time, and the cock sings his monotonous but melodious song from high in the taller trees. Plate 48 shows the birch-covered slope where Swanberg took his photographs, a habitat similar to that in which Robert Collett (*Ibis*, 1886, pp. 217-223) found three nests near Matsjok in the Tana region of Norwegian Finmark, but perhaps not a really typical habitat. We are therefore grateful to Capt. J. H. McNeile for his photograph (plate 55) of the immediate surroundings of a nest in low-lying and wet, mosquito-infested woodland. In his experience over three nesting-seasons (*Stavanger Mus. småskr. zool. ser.*, nr. 4, 1952) in the area of the lower Pasvik River in South Varanger (East Finmark), this bird is most frequently found in the swampy and fairly open forests of 20- to 40-foot birches with an undergrowth of willow and alder scrub. Three of the nests he located were built in the sides of low, mossy hummocks, two of them with their entrance-holes barely a couple of inches above the wet mud. Swanberg's nest was sited on a vertical bank (plate 49). McNeile emphasizes that the nests are very loosely woven—of soft, fine grasses mixed with a varying amount of green moss.

The dominant field-character in the plumage of greenish above and whitish below is of course the yellow superciliary stripe that can be seen so well in plates 49-52. This is made more prominent by the dark green line below it through the lores and behind the eye, below which there is another short strip of yellow. The head-pattern can perhaps best be seen in plate 51. In fresh plumage the greater wing-coverts and, to a lesser extent, the median ones have greyish-white tips which result in two pale wing-bars, the greater of which is usually noticeable at close range. Wear causes these tips to become less distinct and those on the median coverts quickly disappear. Sometimes the

tips of the greater coverts are similarly lost and this has happened to the female in these photographs; a study of plates 50-52 will show this (note the worn appearance of the female's coverts) and give an indication of the value of the bar as a field-character. The two photographs on plate 54 are more than good enough to illustrate the diagnostic wing-formula. No other leaf-warbler has the combination of such a minute first primary, a lack of emargination on the sixth, and pale tips to the coverts.

I.J.F.-L.

FIELD OBSERVATIONS ON THE BIOLOGY OF THE MARSH TIT.

BY

AVERIL MORLEY.

(Continued from page 287.)

(4) BREEDING BEHAVIOUR.

MAY (1949) asserts that as pair-formation behaviour patterns "are not related to the sex act, which is the criterion for 'sexual behaviour' ", pair-formation is not sexual behaviour, at any rate in the Willow Warbler (*Phylloscopus trochilus*) which he studied, but apparently social. The male's resistance to a companion is worn down by the female's persistence in invading his territory and continuing to do so in spite of all rebuffs. But surely her behaviour at least must have a sexual element in it, otherwise what is there to prevent her, if all she wants is sociability, from forming mono-sexual groups? It would surely not be possible to maintain that pair-formation and pair-persistence are purely social actions in such a species as the Marsh Tit, which maintains pairs throughout the year and at the same time for most of the year has a social life in the flock where it meets plenty of other Marsh Tits.

Formation and persistence of pairs in the Marsh Tit was considered in a previous paper (Morley, 1950). Let us now follow a little the life of the pair throughout the year, starting from June, the close of the breeding-season. Figure 1 attempts to portray diagrammatically the approximate annual pattern of behaviour shown by the adult Marsh Tits in the study area. It shows the dramatic change in the adult's life which takes place from January onwards due to the onset of breeding behaviour, and the equally sudden return to ordinary life when the breeding-season is over. The pair remain together on the territory, sometimes alone, sometimes moving about with the flock, keeping in touch with small soft *sip* notes or an occasional *pitsu*. They support each other if there should be a dispute with other Marsh Tits. Nothing more than this was observed in June



BREEDING-AREA OF ARCTIC WARBLER (*Phylloscopus borealis*)

NORTHERN SWEDISH LAPLAND. JULY, 1952.

(Photographed by P. O. SWANBERG).

On the right is the mountain Nuolja, near Abisko. The nest shown in plates 49-54 was among the uppermost birch trees growing on the slope (see page 330).



ARCTIC WARBLER (*Phylloscopus borealis*).

FLYING FROM NEST. SWEDISH LAPLAND. JULY 25TH, 1952.

(Photographed by P. O. SWANBERG.)

The domed nest built mainly of moss and lined with fine grasses, was sited on a vertical bank and well concealed by the vegetation (though this was opened out for these photographs to be taken). The young at this time were about ten days old.



ARCTIC WARBLER (*Phylloscopus borealis*).

PAIR AT NEST. SWEDISH LAPLAND. JULY 25TH, 1952.

(Photographed by P. O. SWANBERG).

The male (on the left) shows somewhat indistinctly the characteristic light wing-bar produced by the greyish-white tips to the greater wing-coverts; the female has, as sometimes happens, lost these tips through abrasion (see page 332).



ARCTIC WARBLER (*Phylloscopa borealis*)

MALE AT NEST. SWEDISH LAPLAND. JULY 25th, 1952.

(Photographed by P. O. SWANBERG).

This shows to perfection the form of the sulphur yellow stripe from the nostrils over and behind the eye. The greyish white wing-bar can be seen here on the other wing.



ARCTIC WARBLER (*Phylloscopus borealis*).

FEMALE AT NEST. SWEDISH LAPLAND. JULY 25TH, 1952.

(Photographed by P. O. SWANBERG).

The female's eye-stripe is of the same colour and shape as that of the male, but compare again the tips of the greater wing-coverts.



ARCTIC WARBLER (*Phylloscopus borealis*).

NEST-SANITATION. SWEDISH LAPLAND. JULY 25TH, 1952.

(Photographed by P. O. SWANBERG).

The female seizes the faecal sac as it emerges, thereby preventing its dropping onto the nest.



ARCTIC WARBLER (*Phylloscopus borealis*).

AT THE NEST. SWEDISH LAPLAND. JULY 25TH, 1952.

(Photographed by P. O. SWANBERG).

- Upper : The peculiarly short first primary can just be seen on the right wing, its tip level with the tips of the greater wing-coverts.
- Lower : The wing-formula can be seen very distinctly here ; note the relative lengths of the second to fifth primaries and the emargination of the third to fifth.



NESTING-HABITAT OF ARCTIC WARBLER (*Phylloscopus borealis*).

EAST FINMARK. JULY 2ND, 1951.

(Photographed by CAPT. J. H. McNEILE).

Capt. McNeile examining a nest in the Varanger region of Norwegian Finmark. This is perhaps the more typical site—a low-lying, mosquito-infested birch forest, the nest being built in the side of a mossy hummock on the wet ground (see page 331).



FIG. 1: APPROXIMATE PLAN OF ADULT MARSH TITS' ACTIVITIES THROUGHOUT THE YEAR. HATCHED PORTIONS INDICATE TRACE ACTIVITIES.

and July, but from August onwards, proximity to hole-bearing shrubs such as elder occasionally revived a significance which such shrubs held for them earlier in the year. For example, a pair on their way back from a border skirmish with neighbours paused by a hole in an elder, and the male looked at it closely with twitching wings, uttering the nasal *ter-cher* note (see p. 279). Signs that the pair are not indifferent to each other as male and female were given in August, 1941, when a landless bird showed attachment to a pair, or rather to the male member of it. While it was keeping close to the male, the female repeatedly flew at it, evidently resenting the proximity. The male took no notice of it and the interloper made no retaliation but would not be dislodged. P. S. Burns (1952) records a Marsh Tit carrying beakfuls of nesting material—lichen and moss to an elder in September.

A slight but steady interest in holes was shown from October by all the tits of the genus *Parus* in West Wood. The same holes were investigated by the four species. My own impression is that the Marsh Tit showed its interest in a somewhat tame manner compared to the other species, especially the Blue Tit. It would perch by the hole, fly off a little way and wipe its bill on its new perch, then return, call *su*, and so on.

Alongside the autumnal incipient interest in holes develops an interest in the places where holes occur. From the end of November the scattered patches of elders on the borders of territories began to be contested between neighbours and fights became more violent and prolonged in the vicinity of these shrubs. On December 10th, 1938, a female began flying rapidly from perch to perch, calling *pitchou*. The male replied and flew up to her, whereupon she uttered the high sibilant trill heard from the female in the breeding season. The male flew off to some blackthorn scrub, and she followed him, uttering the note again. She then became interested in a shallow cavity in the rotten bough of an oak, flying in and out of it and not retreating more than a yard or two before returning, uttering excited *sip, sip* cries. Skutch (1946) in his life history of the Costa Rica Tityra (*Tityra s. costaricensis*) notes how this hole-nesting bird shows interest in holes at all times of year, and that, as is apparent with the Marsh Tit, the first stage is one of *looking* in, rather than *going* in to, holes. The Tityra begins to visit holes in earnest in November while nest-building apparently begins from the end of February.

From November also were seen, in brief and soon-vanished form, chases between mates, small commotions and fuss, flying close around each other with soft excited *sip* notes.

Mid-January saw the beginning of the proper song-period of the West Wood Marsh Tits. During this month, the vicinity of hole-bearing shrubs and the canopy above them became ever more attractive to the birds so that the ties with the flocks were loosened and the birds were found more frequently alone in these parts of their territories. From this month, too, the above-mentioned chase or emotional fuss became more frequent, the pair whirling round each other for a few seconds. Or they might move rapidly from perch to perch attacking oak buds, bark and moss, with twitching wings. Emotional fusses might end with visits to holes, both birds alternately going in and out, or they might be performed between the pair after the close of a skirmish with neighbours. A fairly representative section of behaviour was shown by a pair which made a chase, then clung 8-9 inches apart upside down on twigs, the bark of which they pecked and tore, then the male flew at the female as if she had been an interloper and darted off to the tree tops, there to burst into song. This pouncing action is widespread among birds and has been thought to be a means

whereby one partner (usually the male) attempts to impress its dominance over the other. Female Marsh Tits occasionally pounced on their mates but were not recorded doing so after the end of March.

During February the twitching of the wings while the bird is foraging becomes marked, showing that the apparently passive bird is really in a state of tension which is likely at any time to be fired into more definite expression. A pair may move rapidly about, sometimes almost bouncily and clumsily, in the canopy above a group of elders, and go from group to group in this manner, perhaps with no pretence of feeding at all. Or they may descend to the base of the shrubs' trunks, moving round and round them, or perching near the holes without going in, calling noisily—especially the male—the *pitchou*, the loud *tew* and *tsup*, or the nasal *ter-char-char* note.

Though the males were noisier than the females in the vicinity of holes, the females sometimes had more vigorously twitching wings and a greater restlessness, visiting elders in quick succession, or occasionally inspecting the snag ends of rotten oak boughs. The males might be hard put to it to keep up with their mates. Attractive patches of elders, in or out of their own territories, became objects for visiting, and excursions were made which ordinarily were not attempted.

March saw a peak in the activity of hole-visiting. The birds elung to the entrances, bobbing their heads with excited *sip* notes and many *pitchou* calls. Two pairs visiting the same batch of elders led, of course, to noisy strife. A female *en route* for the scene of battle between her mate and a neighbour perched at the entrances of three successive holes with twitching wings before throwing herself into the fray and another female visited holes at intervals during the fight. The pair may visit holes when alone or when arriving in the vicinity with a flock. The male may sing somewhat softly in the elder clump, and one male, whose soft song verged on the low *yu-yu* throbbing version (see p. 274) also strung together small whispered shrew-like notes and twitters merging into a sub-song. Bachelor males occasionally visited holes, but were not seen to set out purposefully to visit, as did mated pairs. The bachelors were often noisy, giving long loud series of *pitchou* from their winter scrub haunts as well as song from canopy and shrub, but they did not elung to the vicinity of hole-bearing shrubs. A deserted male whose female ultimately returned to him after 5 weeks' absence, was seen during his grass-widowhood to visit a woodpecker's disused hole with twitching wings and loud *putz* calls. A male which was silently and unobtrusively sidling up to the future nest hole was driven off by the female. The pair had used this hole for nesting the previous year. The female also drove off Blue Tits from the hole, but could only watchfully retire when Great Tits decided to inspect it.

from other tits, though in the Crested Tit (*Parus cristatus*) the male's aid appears to be rare (*Handbook*, 1938), and in the Willow Tit the male helps in boring, but it is not known if he helps in collecting the nest.*

Building was not always confined to the nest hole: several females were found carrying material to more than one hole. One hole was on the boundary of two territories, and the two females concerned both stuffed it with material. Another female actually invaded a neighbour's area to take stuff into a hole. During building aggressiveness appears to wane to some extent, and owners may allow encroachments which a few weeks earlier could scarcely have been made without protest. I have watched a trespassing pair on their way to a hole actually pass the tree where the owners were busy—the female building—and no notice taken of them. This decline in aggressiveness does not appear in Table 2 where aggressiveness is reckoned per month, because the first part of April is full of strife. Song also starts to decline from the first week of April, but the low vibrant *yu-yu* note becomes commoner, sometimes joined up with the whispery skirl, especially round the nest-site. Also at the beginning of April appears the act of courtship-feeding, which was the subject of a previous paper (Morley, 1949).

A tiny strand or two of wool or fluff, an odd hair caught on the rough edge of the entrance show when building is in progress at a hole. Building of the nest was noted about 7-8 days before the beginning of egg-laying, being first seen on April 13th, 19th, 16th and 17th during the four study years respectively, but probably began before these dates. The female continues to take material to the hole up to at least the fifth day of incubation; building during incubation is known for other members of the genus. The load taken to the nest might be small or large, and the time taken weaving it into the nest was variable, sometimes a minute or two, sometimes longer. Building may be fairly continuous but often appears spasmodic, and after one or two visits the pair remain away from the hole for an hour or more, though they may not go far off.

In West Wood the materials used were moss, small pieces of dead braeken and dead leaves, sheep's wool, rabbit's fur and the white fluff attached to the seed capsules of rosebay willowherb. A long piece of grey cotton was found in one nest. The Marsh Tits had to go a considerable distance for the sheep's wool as the nearest flock were about 250 yards away and further still in some years. One wonders how the birds found the sheep, across an open field and gardens. The depth of one nest was measured and

* Pullen (1946), and Arnold and Arnold (1952) found that only the female Blue Tit built the nest, but *The Handbook* states that both sexes build.

was $2\frac{1}{2}$ inches. An abandoned site had 4 inches of material; presumably the amount depends on the depth of the hole. The first-mentioned nest was 7 inches below the lower rim of the hole, but many nests, of course, are nearer the entrance and some lie almost flush with the lip of the hole. Another nest lay at the bottom of a 3-foot hollow stump.

Table 7 gives details of nests, 16 of which were found during 1938-42, and 4 in the same area in 1946.

TABLE 7: MEASUREMENTS OF NESTS.

Height of hole from ground		Circumference of branch		Dimensions of hole			
No. of nests	Height feet	No. of nests	Inches	No. of nests	Length inches	No. of nests	Width inches
1	c. 30	1	$18\frac{3}{8}$	2	8	1	3
1	5	1	$16\frac{1}{2}$	2	4	1	$2\frac{1}{8}$
3	4 or over	1	16	1	$3\frac{3}{4}$	1	2
5	3 or over	2	15	1	$3\frac{1}{4}$	5	$1\frac{1}{2}$
3	2 or over	2	$14\frac{1}{2}$	2	3	1	$1\frac{1}{4}$
7	1 or under	1	$14\frac{1}{4}$	1	$2\frac{1}{2}$	2	1
		1	14	3	2	2	$\frac{7}{8}$
		1	12	1	$1\frac{1}{2}$		
		1	$10\frac{1}{2}$				
		1	9				
		1	$7\frac{1}{2}$				
Totals of nests	20	13		13		13	

The Table shows a slight preference for two levels for the nest-site, one at 3 feet and over, the other from ground level to 1 foot. The average circumference of 13 branches and trunks bearing holes with nests was $11\frac{1}{4}$ inches, but actually the number of nests situated in branches or trunks between 13 and 19 inches circumference was double that in branches between 7 and 13 inches. No special preference was indicated for a hole of any particular length, but one was indicated for width, where 4 nesting holes were 1 inch or less in width; 7 were 1 to 2 inches in width; and 2 were 2 to

3 inches wide. It is probably the width of the hole which eliminates the Great Tit as a competitor for holes. Width may also be important in preventing predation of eggs and young, but there is no information on this point, nor any evidence that the Great Tit, breeding in holes of larger diameter, was more prone to suffer from rodent predation.

Thus an elder or shrub producing similar holes generally needs to have attained a circumference of some 13 to 17 inches in order to form holes between 1 and 2 inches in width at the entrance. Such elders are drawing to the end of their lives in the woodland conditions of West Wood. In 1946, many of the nest sites of the observation period 1938-42 had disappeared, the shrubs having tumbled down and become buried in bracken, bramble and honeysuckle. A sign of their decay even when erect were the cavities appearing at the foot, where 25 per cent. of an admittedly small total of nests were found, there being 5 nests at 5 inches and under from the ground.

COMPETITION FOR HOLES.

The Marsh Tit's territorial system encourages the elimination of rivals for holes which are of the same species, but there is still competition between one species of tit and another. Great Tits dominate Marsh Tits, monopolizing a hole the latter had originally claimed, and also driving them away if their holes are too close. I have seen a pair of Great Tits which were nesting a few yards from Marsh Tits strike the male Marsh Tit as he perched outside his nest, and when the female rushed forward all agitation, chase her violently away, so that the smaller birds were forced to retire to the canopy till the Great Tits moved off. Great Tits visit with impunity a hole chosen to be the nest-hole of Marsh Tits, which can only look on tensely till the Great Tits decide to go. In this situation they may utter the Blue Tit-like scold, *ter-cher-cher* (see p. 278).

Marsh Tits and Blue Tits are on a more equal footing as regards size, and here the Marsh Tit becomes assertive. It would seem that there is nothing to buffer them from each other's competition, unless it can be shown that they tend to nest at different vertical levels or that some other ecological factor is involved. In 1941, a pair of Marsh Tits appropriated a hole 18 inches away from a pair of Blue Tits nesting in the same elder. The Marsh Tits were ahead of the Blue Tits in breeding sequence, the clutch being laid while the Blue Tits were still visiting and inspecting. Both male and female Marsh Tit at this stage uttered the low gruff threat-note, *ter-chow-chow*. The male also uttered forcefully and shrilly the alarm *chit*, the battle-cry note, and sang a little of the *chip* song against the Blue Tits. The pair clung

noticeably more than other Marsh Tits to the immediate surroundings of their hole, frequently visiting it, i.e., every 5-7 minutes. During incubation, when the male Marsh Tit was coming with food for the female in the hole, the Blue Tits were building. He stayed about the elder uttering long strings of the *pitchou* note and driving at the persistent pair without effect. They did not retaliate, but also would not go away. But when the Marsh Tits' young were about 5 days old, and the female Blue Tit was incubating, the position was reversed, for the male Blue Tit became dominant over the Marsh Tits. He now adopted his specific threat attitude, with nape feathers puffed out and shoulders hunched, and drove the Marsh Tits off the shrub, then flying to perch at his hole's entrance as if to show them it was his. The Marsh Tits now made no retaliation, and occasionally were even unable to get to their hole to feed their young. This interesting change in dominance would seem to be a reflection of breeding condition and would indicate that birds building and birds feeding young are not at such a pitch of aggressiveness as birds laying and incubating or with mates at that stage. The following April, in 1942, the same pair of Marsh Tits nested in the same hole, and objected to a Blue Tit which was making sexual calls about the elder. The male Marsh Tit frequently visited (e.g., 11 times in 30 minutes) the old Blue Tit nest-hole, as well as his own, and the pair successfully maintained possession of the stump.

Courtship-feeding and coition have already been discussed in a previous paper (Morley, 1949).

LAYING.

It was not easy to discover the date on which the first egg was laid because the Marsh Tit, like other members of the genus, covered the eggs with nest-material, so that all the observer saw was a felted pad. This may be a protective device. The date when laying began was variable from year to year and from pair to pair within the year. In 1938, H. N. Southern found two nests which must have started their clutches on April 15th. During the period 1939-42, the first and last dates known to me for the start of laying were April 16th (1940) and May 2nd (1941). In 1946, two clutches must have been begun about April 17th-18th, and one clutch on April 9th. These records, therefore, give a possible variation of some 23 days. Other dates of the start of clutches were April 18th, 20th and 23rd. All but one of these is in advance of the date given in *The Handbook* for the species' breeding season, which is said to be from about the last week of April in southern England and from early May in the North. Edwards (1945) noted in Berwickshire a nest containing eggs on April 27th and young on May 9th, and he felt that this record, too, was in advance of *The Handbook's* statement.

Three clutches recorded by H. N. Southern in 1938, were 5, 10 and 7 eggs; 5 clutches recorded by myself were 6, 7, 9, 9, 10, the last three numbers being produced by the same female in consecutive years. Hinde (1952) records that the female Marsh Tit roosts in the nest-hole during egg-laying.

INCUBATION: BEHAVIOUR OF THE PAIR.

During the first week of incubation the usual routine for the male was to punctuate patrols and foraging in the territory with visits to the nest. He might approach silently until the last few yards, or begin his soft *tsip tsip* or *pitchou* up to 100 yards away. A description has already been given (Morley, 1949) of the usual course of events during these visits, as observed in the observation area. I did not find the male normally entering the nest-hole until the young hatched, but it is possible that this behaviour was linked with the size of the hole and lack of space when the female was brooding, for two males observed occasionally to enter their nest-holes during incubation had noticeably roomy cavities. A total of 702 minutes was spent at 5 nests to time the visits of the male. During the first 7 days of incubation, 19 visits were recorded in 315 minutes, a ratio of one visit to 16.5 minutes. For the last 6 days of incubation, the male visited the nest 11 times in 387 minutes, or one visit to 35.1 minutes, i.e., his visits were half as frequent as before. Nine of the 19 visits in the first period caused the female to leave the nest for periods varying from 1.5 to 10 minutes. In the second period of incubation, 7 of the male's 11 visits caused the female to leave. But the male's lengthier absences from the nest in the last 6 days did not entirely result in longer sitting by the female, as she left the nest on her own initiative on five occasions, whereas in the first 6 days she was only seen to leave when the male visited her. During the first 7 days, the female's spells on the nest averaged 20 minutes, with 6 minutes off; during the last 6 days the spells "on" averaged 24 minutes, the spells "off" 5 minutes. The maximum time "on" was 40 minutes, and the maximum time "off", 10 minutes. Foster and Godfrey (1950) for the Willow Tit state the female generally alternated periods of 20-30 minutes on the nest with 5-10 minutes off. Pullen (1946) records that for the whole incubation period of the Blue Tit, the female averaged 15 minutes on the eggs and 5 minutes off, but the female Blue Tit watched by Arnold and Arnold (1952) averaged 59 minutes "on" (with a maximum of 120 minutes) and 7.5 minutes "off". The male Marsh Tit often accompanied the female back to the hole, and might sing around the site before leaving again. Pullen noted that the male Blue Tit almost ceased to feed the female at the nest by the 5th day of incubation, and a call to come out and feed was given instead. These calls too became less frequent, and towards the end of the

period the male was seldom seen. Foster and Godfrey (1950) also noted a considerable decrease in the male Willow Tit's feeding of the female during the last 10 days of incubation.

The position of the eggs gets changed during incubation, whether purposely or accidentally it was impossible to tell, and up to at least the third day of incubation some females continued to cover their eggs when leaving the hole, as was done during the laying of the clutch.

If two pairs happened to collide on their boundaries during the incubation and fledging periods, typical aggressive reactions occurred with postures and calls.

BEHAVIOUR OF THE PARENTS FROM HATCHING TO FLEDGING.

The hatching of the eggs did not alter the parents' rhythm from that of the second half of the incubation period, with the female brooding between the male's visits. One male visited the nest only twice in 65 minutes on the day of hatching, but another—an exception—would scarcely leave the nest alone. By the third day a slight increase in the male's visits was apparent, and by the fifth day his visits became frequent. During the 623 minutes of observation to time the parents' visits, the males did the bulk of feeding with a total of 106 visits, or 68 per cent., of the 156 visits paid by both parents. Over the whole fledging period this averages out at one visit every 4 minutes. Foster and Godfrey's Willow Tits visited the nestlings once every $4\frac{1}{2}$ minutes. But in the first 4 days of the Marsh Tits' lives, parental visits averaged once every 8 (7.9) minutes, of which 86 per cent. were made by the males. If the females brought food to their nestlings during the first 4 days, that food was not visible in their bills. They themselves were still being fed at the hole by the males.

Removal of excreta from the hole was not recorded until the 6th day of life; perhaps more intensive watching would disclose an earlier date. Foster and Godfrey record it for the Willow Tit on the 4th day of life; Arnold and Arnold (1952) state that in the Blue Tit excrement was first carried out 24 hours after the young hatched. Both Marsh Tit parents took away excreta, as noted by Tucker (1941). In the present study, in 623 minutes, the males carried excreta away 24 times in their 106 visits, the females carried excreta 8 times in 50 visits, but if the first 5 days of the nestlings' lives are subtracted, when no excreta were seen taken away, then the males removed excreta 24 times in 77 visits, the females 8 times in 43 visits. Thus the males cleaned the nests once in every 3 visits, the females once in approximately 5 visits. Pullen's Blue Tits carried away excreta about once in every 8-10 visits. The excreta were carried in the Marsh Tit's bill, and taken about 10-20 yards from the nest and laid on a branch or twig.

The female brooded the nestlings at night up to at least the 7th day of life, but unfortunately I have no records thereafter for that point. During this first week of life, though the nestlings' eyes were closed they were evidently sensitive to light, for a hand placed noiselessly at the hole so as to block the light as does the body of the parent provoked the gaping reaction. The broods fledged in the early morning, for the nests were always empty by 5.30 a.m. (G.M.T.). One brood in 1941, numbering 9, completed its 17 days fledging period on May 31st but remained in the nest until the early hours of June 3rd. The Radcliffe Observatory at Oxford 5 miles away recorded for June 1st and 2nd a minimum ground temperature of 40.3 and 39.8°; the 50-year average minimum for June is 45.9°. The spring of 1941 was abnormally sunless as well as cold. From May 29th to June 2nd sunshine averaged 1.84 hours a day; the normal is over 6 hours a day. The daily sunshine for the last 15 days of May that year totalled only 39.55 hours, or 2.6 a day.

(5) NOTES ON ROOSTING BEHAVIOUR.

Work on the Starling (*Sturnus vulgaris*) (Morley, 1939, 1941), which is a hole-nesting species, led me to think that the roost-site might be important in the breeding biology of the Marsh Tit. In fact, this did not prove to be so. In Starlings, the roost-sites are constantly used throughout the winter by resident birds, members of a pair roosting together, but the male and female Marsh Tits roosted apart and the same roost-hole was not always used every night. This does not appear to be true for all tits; the Blue Tits studied by Colquhoun (1942) apparently used to roost consistently, but in this species also the pair did not roost together.

My observations were chiefly made in February, March and April, all on territory-owners. The pair, and particularly the male, began to call *pitchou*, usually from 4 to 12 minutes before the actual roosting time. They start to call wherever they are in their territory, and fly, either direct or by stages, to the vicinity of the roost-hole. Neighbours call similarly, and this chorus is quite a striking feature of woodland sounds towards dusk. The Willow Tit was also heard to utter bursts of its comparable *pitchee* note at roosting time. The birds might do a small amount of foraging near the roost-site, or they might perch and preen for a few minutes. In March, the male occasionally chased the female as she moved to her hole, both uttering soft *tsip* notes. Colquhoun *loc. cit.*, records a "good-night" display in paired Blue Tits, consisting of an evening flight which is often a chase, occurring frequently through November and December and early spring. The female Marsh Tit roosted before the male, in this agreeing with the Blue Tit and the Starling. Almost invariably, she called *pitchou* two or three times before entering the hole, and was answered by the male, which often continued to call *pitchou* after

she had gone to roost, and preened and fed a little on his own. Within a few minutes he flitted off to his own hole, within which he might utter a few more muffled-sounding *pitchous*. The holes of the pair were sometimes close together, i.e. 10-15 yards apart, but sometimes as much as 50 yards apart. Colquhoun recorded paired Blue Tits often roosting close together. If alarmed at the roost-hole, the Marsh Tit became very cautious. It might hang about for a good half-hour after the normal roosting time, or it might "freeze" while perched near the hole, and in the failing light became an object extremely difficult to see, the soft buff-brown colouring harmonizing successfully with the bark and branches around it.

Six roosts were in oak, 8 in elder. A bird roosting in oak one night might choose an elder the next. The oak sites were all in the cavities at the ends of rotten boughs, where occasionally a hollow ring of bark 2-3 inches in depth remained when the wood had perished. The sites were from 10 to 30 feet up the tree, and about 1½ inches in diameter. Sometimes it was a close fit, and while the Marsh Tit wriggled to get in, the bark-ring would wobble in a perilous-looking way. The elder sites were all holes in the body of the shrub, not in the cavities at the foot. Ruttledge's account (1946) of the roosting habits of the Coal Tit in Ireland records similar behaviour except that the bird tends to be silent about half-an-hour before roosting, unlike the Great Tit and Blue Tit in Ireland. The Irish Coal Tit also uses one roost much more regularly than did the Marsh Tits studied by me.

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NOTES.

Nesting of Curlew on river shingle-beds.—Of late years Curlews (*Numenius arquata*) have been nesting in increasing numbers on inland pastures and meadows in Northumberland, whereas formerly they were birds of the moorlands, nesting on heather-clad hills and rough marginal land. For the last ten years or so, they have descended to nest on cultivated clover and corn fields close to villages and even to towns. More recently I have found pairs nesting on river shingle-beds in the upper reaches of the River Tyne. On May 19th, 1951, I found a nest with two eggs on a wide stretch of shingle just below the town of Haltwhistle, Northumberland. It was simply a scrape, without any lining whatever, in no way differing from those of the Oystercatchers (*Hæmatopus ostralegus*) nesting close by. The following year, on May 5th, 1952, on the same shingle-bed, I found a nest with three eggs which, again, was simply a scrape without any lining. The only growing vegetation within 20 yards of the nest was one or two small tufts of grass and a few cushions of thrift. On the same day I found another nest, with four eggs, on a similar patch of shingle a mile further up stream. In this case

there were four or five pieces of moorland rush as a lining. Apart from these two pairs, the nearest breeding pairs were at least a mile away and on much higher ground.

In 1953, though several pairs haunted the area during the early spring, no nests were found; probably the birds were disturbed by the activities of a dredger on the river. MATTHEW PHILIPSON.

Common Terns nesting inland in south Lincolnshire.—During the summer of 1952 the course of the River Welland was enlarged above Spalding in Lincolnshire, and Common Terns (*Sterna hirundo*) were observed feeding over the new river. On May 30th, I found a nest with two eggs in the middle of an open ploughed field beside the river; a second pair of terns and an unattached bird were also present. This is apparently the first record of terns nesting inland in the fens in recent years, although the birds have been nesting inland on the Norfolk Broads, at Abberton Reservoir in Essex, and elsewhere in southern England for some years now.

The birds returned in 1953, and I am informed that Mr. I. C. T. Nisbet found 3 or 4 pairs and at least two nests.

W. R. P. BOURNE.

Actions of bathing Guillemots.—On January 11th, 1953, I saw several Guillemots (*Uria aalge*) swimming and bathing close in-shore under cliffs near Brixham, Devon, and observed the following actions. The birds went through the normal bathing routine, firstly stretching the wings and preening, and they then "threshed over the surface with rapidly beating wings, and breasts elevated." as described in *The Handbook*—although in this case the birds did it individually. After this, several of them turned over onto their backs and flapped head-first along the water for two or three feet, the head being held well up, and the the bill horizontal. To regain their normal positions, the Guillemots usually rolled over sideways with as much flapping of wings and kicking of legs as when they first turned over onto their backs. but occasionally they actually made a backward dive into the water to return to the surface in the normal swimming position, facing now in the opposite direction. A few Razorbills (*Alca torda*) present were not seen to swim on their backs, although preening and bathing much of the time.

It is interesting to compare this observation with Mr. B. King's note of Razorbills swimming on their backs under water (*antea*, vol. xlv, p. 430).

C. H. FRY.

Aerial assembly of Ravens in December.—On December 26th, 1952, I watched an aerial display by a concourse of Ravens (*Corvus corax*), which had unusual features. Large flocks of Ravens are commonly seen in West Wales from August to the end of October, and are presumably due to the gathering together of many fledged birds; I have seen up to 126 in a flock in

autumn off the coast of St. Bride's Bay, Pembrokeshire. There are Raven roosts on crags and in wooded valleys in West Wales, and the morning and evening flight may be watched at these sites. But this particular concourse took place from 14.00 to 15.30 hours within one mile of the town of Tenby, Pembrokeshire, over a wooded valley to the north-west. When I first saw it there were 35 Ravens in the air together; a few minutes later I could count 58. They were flying at between four and five hundred feet, sometimes higher, and circling within a diameter of about a quarter of a mile. The most notable feature was that they were moving singly or in pairs; in the latter case the rear bird appeared to be pursuing or at least following the other, although without any evidence of frantic haste. The singletons crossed and recrossed the aerial circle. There was no soaring or gliding on the scale seen when birds are rising on a column of warm air; although the day was calm and sunny, the air was cold and the Ravens had to flap their pinions continuously to maintain height. Nor was there more than one rollover or turning on back witnessed—this by a bird coming in low over the valley. The weaving to and fro of the singletons continued as if each was seeking a partner; while the pairs gyrated in follow-my-leader style within the aerial circle (it was as if the concourse had been convened for the purpose of pairing). It was impossible to tell the ages of these birds, but I had the impression that they were young and had never bred before; I suppose I was influenced in this impression by the lack of the roll and other aerial evolutions of the mature display of experienced breeders, by the comparatively medium bass croaking, which seemed to lack the deep tone of old birds, and by the fact that most old breeders are already patrolling territory at this date, and would not be manoeuvring for mates in this way. It was interesting that this aerial meeting took place over neutral territory (at least two miles from the nearest breeding site); when last seen it had drifted high over the northern outskirts of Tenby. Like many of the mid-winter assemblies of the Corvidæ, this Raven gathering may have been primarily social, stimulated by the fine calm clear weather, and with only a secondary sexual significance; although it is true that a dead sheep had attracted some Ravens to this neighbourhood for some days previously, but the carcase had been disposed of by the farmer and no food was available nor were any Ravens on the ground. (The largest normal gathering to roost of Ravens I have witnessed was a maximum of 126 birds—again moving chiefly in pairs or singly—each evening between September 15th and 18th, 1953, on the north cliffs of Skomer Island, Pembrokeshire).

R. M. LOCKLEY.

Robin taking food from the bed of a shallow stream.—In December, 1952, I watched a Robin (*Erithacus rubecula*) that

was taking food from the bed of a shallow, sluggish stream at Virginia Water, Surrey. The stream in question was about six feet wide and between one and three inches deep, perhaps rather more in places, where the Robin was feeding. The bird would perch on a stone in midstream, looking around in the typical manner of a food-seeking Robin. Then it would suddenly hop into the water, and either pick up some morsel from the bottom and at once return to the stone, or more often hop about in the water to the full length of its legs for some moments before observing and seizing a morsel from the bottom. On three occasions when it (apparently) saw food in water too deep to alight in, it hovered above for a second and then with a preliminary upward rise plunged in, its head and shoulders going under water, but each of these times the bird immediately came out again and did not actually alight in or on the water. It was noticeable that the Robin appeared able to wade in rather deeper water than the Grey Wagtail (*Motacilla cinerea*) that was feeding in the same area, but never stayed in the water for more than a few seconds at a time, whereas the Wagtail waded almost continually. After I had watched it for about ten minutes the Robin flew into some bushes several yards away. Beside smaller items, both it and the Grey Wagtail took some blackish objects about as large as a grain of wheat, but I was unable to discover any food when I looked in the stream. There was a hard frost at the time with all non-moving water frozen.

D. Lack (*The Life of the Robin*, 1943, pp. 124-125) records two instances of Robins taking food from the surface of water, one of a pair taking minnows from a drying up stream and one of a bird which actually dived into the water and caught a Roach. He suggests that the habit of taking food from water may be commoner than is generally supposed. R. G. Adams (*antea*, vol. xlii, p. 136) also recorded a Robin taking food from the surface of water. This, of course, many species will do if the opportunity presents itself and it is hardly on a par with actually searching for, and taking food from below the water's surface; although probably the first stage in such behaviour. DEREK GOODWIN.

Spotted Flycatchers persistently alighting on the ground.—As the Spotted Flycatcher (*Muscicapa striata*) is not often seen on the ground, the following incident which took place in Co. Mayo, may be worth placing on record.

On August 15th, 1951, at least eight Spotted Flycatchers were feeding from a paling alongside an avenue. While under observation for over an hour they persistently flew to the avenue, alighted and obtained food there. On two occasions three were on the ground at the same time. In many instances when on the ground for an appreciable time the birds would hop about while obtaining food.

The maximum period on the ground was in one instance 80 seconds. Once 72 seconds and in two cases about 30 seconds were spent on the ground. On several occasions birds spent 15-20 seconds in this fashion; the most usual duration being from 3 to 10 seconds.

I was unable to discover what food the birds were obtaining.

ROBERT F. RUTTLEDGE.

REVIEWS.

Rare and Extinct Birds of Britain. By Ralph Whitlock. (Phoenix House, London, 1953). 21s.

It is open to question whether a satisfactory book can be written on the subject of our rare and extinct birds. To contribute anything original to knowledge in this field it is not only necessary to undertake a great deal of exceptionally hard work but to overcome the inevitable restrictions imposed by the necessity of secrecy about rare breeders and to face the inconvenient fact that many rarities of today can change their status apparently more rapidly than printers and publishers of today can produce and distribute what is written about them. It is possible to imagine a work which would without necessarily containing many new facts analyse what is known so freshly and develop new and well-founded interpretations so effectively as to represent an important advance, but this would not be easy.

After reading Mr. Whitlock's book one is left wondering why he went to the very considerable trouble of writing it. It is very largely a compilation made predominantly from a fairly small number of obvious and well-known sources. Even as a compilation it contains far too many errors and omissions to be relied upon without checking in every case, and it not only inevitably omits almost every occurrence in the past three years but is also very inadequate on data published considerably earlier, especially in local reports. Its main original feature is an arrangement which assigns two out of its seven chapters to subspecies despite the general acceptance of the proposition that for field observers, to whom this work is addressed, subspecific differences are of almost no relevance. The rest of the chapters are so arbitrarily arranged that the Goshawk, whose nesting in Britain has only recently been proved beyond doubt, appears under "Lost Breeding Species" while "Rare and Local Nesting Species" includes such important former breeders as the Honey Buzzard and the Ruff and such controversial entries as Icterine, Melodious and Orphean Warblers, Tawny Pipit and Goldeneye, while the Black-winged Stilt of which 2 pairs bred as lately as 1945 is listed under "Vagrants" with the bland statement that it "may once have nested in England, though there is no evidence." Brambling and Gull-billed Tern share the same category, while the Moustached Warbler is relegated to "Eccentricities" without any mention of the Cambridge breeding record of 1946. The account of the Black Redstart is so badly informed that the author is still speculating on the whereabouts of T. A. Coward's 1923 breeding site which has of course been disclosed years ago. To anyone with the slightest knowledge of how Hen Harriers have been treated since the war on the Scottish mainland Mr. Whitlock's pious hopes for this species benefitting by "the greater tolerance now shown towards hawks" will ring very hollow. The suggestion that the Grey Lag Goose might be induced to breed in a feral state in the Highlands is evidently made in ignorance of the fact that this has been successfully accomplished in at least two areas over a long period. The "colony" (in fact the pairs are somewhat scattered) of Common Gulls at Dungeness which, having been regularly robbed, has reared very few chicks since the War is described as "flourishing." Readers who rely on Mr. Whitlock's assurance on the Iceland Gull that "the eye is bright red instead of yellow as in the Glaucous Gull" are going to cause trouble for themselves

and local report editors. Space does not permit enumeration of the many other obvious errors.

There are 85 plates many of which are excellent and have been gathered from unusual as well as usual sources and subjects. E.M.N.

Flamingo Hunt. By Paul K. Zahl. (Hammond, London, 1953). pp. 222. 10s. 6d.

The ornithologists of the U.S.A. have long been worried about the survival of their Flamingo, and undoubtedly in its nesting haunts it has for long been the victim of depredations from poverty-stricken natives. At intervals this same tale of woe comes from all the chief breeding stations—Andros, Inagua, Cuba, Venezuela and Bonaire. Nevertheless up to the war, and even a little later, it appears that it has been successful in rearing chicks in at least some seasons. During the last 15 years, however, the situation has been aggravated by other factors. In 1938 the sponges in Bahaman waters got a disease which put a 10-year ban on all sponge-fishing. With this, one of the natives' chief sources of income vanished, and they had to turn to natural foods for their livelihood—amongst them the Flamingo, both eggs and chicks. Again, the war filled Caribbean skies with planes, and, as the Flamingos of the French Camargue have shown, the species is not one which has accustomed itself to man's usurpation of the air. To cap its fate—on Andros—oil was reported in 1946, and the remoteness of its nesting stations was broken up by the clatter of drills.

Dr. Zahl's book is a popular but depressing account of his explorations of the bird's ancestral haunts in the Bahamas. It is a most readable story of labour and toil under a scorching sun in a strange countryside, teeming with varied and specialised types of life, in which the author's training as a biologist made him equally interested. But the burden of his tale is a sad one, for obviously the Flamingo's plight was serious. In fact, on Andros, the classic home of the species, the Flamingo was extinct as a nesting bird.

But a brighter side is recorded, for the Flamingo had in the very hour of its trial, a slice of luck. Inagua has long harboured small colonies, but in 1936 it became accidentally a sanctuary. The revival of its salt-mines by an enlightened American family, the Ericksons, brought many benefits—the enlargement of feeding areas of suitable salinity and above all native prosperity making the Flamingo no longer an attractive item of food. All this, too, at a time when the bird was desperately seeking a refuge from persecution in its other haunts. It may well be that the arrival of the Ericksons will prove to have been the American Flamingo's salvation. Today Inagua is by far the largest of its breeding stations.

Dr. Zahl's anxiety was communicated to the Colonial Administrations concerned and to the National Audubon Society of America, and his agitation has resulted in measures being taken to protect the species. The Audubon Society set its chief research man, Robert Porter Allan, on to the task, and his reports since 1950 show a more rosy picture, not only in Inagua, but in Cuba and Venezuela. Interest and action have been aroused. But much of the background-work from which this improvement has arisen must be credited to Dr. Zahl's explorations and work, of which he tells in these pages.

Although dealing with a subject so far removed from our islands (yet within our colonial control), the book is to be recommended to all interested in the protection of birds, if only for the picture it paints of the complexity of the problems surrounding wild-life conservation. Two points of criticism must be raised. The book lacks a map. It lacks also illustrations. When one knows that Dr. Zahl has so many excellent photographs in monochrome and colour of his splendid subject, it is a pity that the lay reader, for whom the book is designed, is not given the opportunity of having some of them as a supplement to the text. G.K.Y.

Animal Ecology. By W. H. Dowdeswell, M.A. (Methuen, London, 1952). 12s. 6d.

In these two hundred pages the author, who is Senior Biology Master at Winchester, has provided a clear, compact and well-arranged introduction to

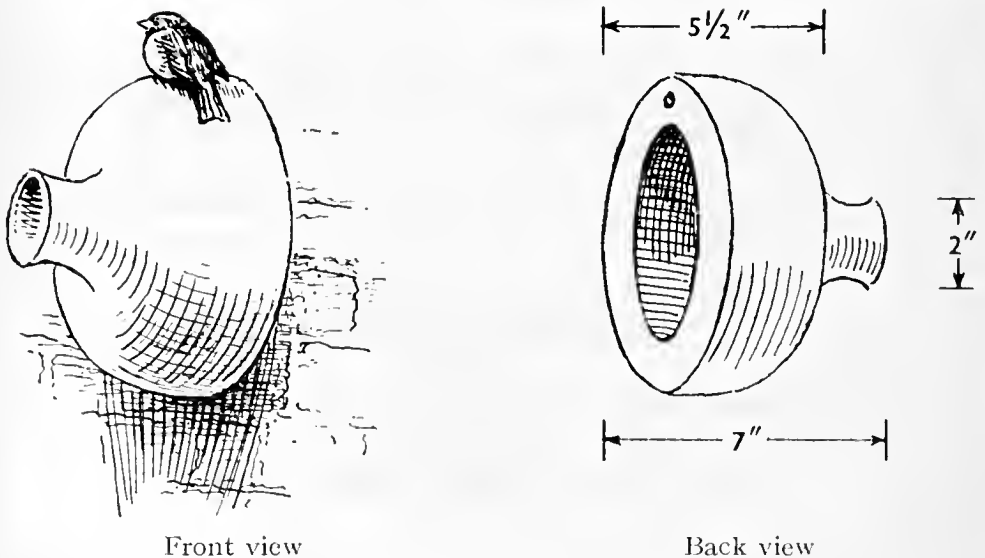
the subject which will be of value not only to students but to ornithologists and others who feel the need of a more general background. The diagrams, glossary and bibliography add to the usefulness of this little book, which will no doubt be reprinted. In that case the author should take the opportunity to correct the few misleading statements which are apparent in the ornithological references, such as the assertion that the House Sparrow "is now our commonest passerine bird" (p. 16) and that the Irish Coal Tit is the only Coal Tit known in Wales (p. 25).
E.M.N.

LETTER.

THE USE OF EARTHENWARE POTS AS NESTING-HOLES FOR HOUSE SPARROWS.

To the Editors of BRITISH BIRDS.

SIRS,—In the Vosges mountains in France during the first World War earthenware pots especially designed for sparrows to nest in were to be seen on the walls of a great many farms and I have no doubt the practice still persists. These served a double purpose, for they not only kept the population of House Sparrows in check but they also supplied the farmer with food. I was told that the nests were never taken until the fledglings were on the point of flying, that is to say, when they were most suited for culinary purposes. These earthenware pots, locally called *pots de moineaux*, were roughly



SPARROW POTS.

hemispherical in shape with a projecting spout through which the birds could come and go. Save for a broad flange, pierced with a hole to enable the pot to be hung on a nail, the back was left open to facilitate the removal of the nest. One of these pots is still in my possession. It measures approximately $5\frac{1}{2}$ inches across its broadest diameter and seven inches from its back to the tip of the spout, the aperture of which is just under two inches across.

COLLINGWOOD INGRAM.

[For previous letters on this subject see *antea* pp. 36 and 272. Capt. Collingwood Ingram has kindly sent us a sketch of the pot in his possession, and this is reproduced here.—EDS.]

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BRITISH BIRDS

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MIGRATION AT THE KENTISH KNOCK LIGHTSHIP.

BY

D. F. OWEN

(*Edward Grey Institute, Department of Zoological Field Studies, Oxford*).

(1) INTRODUCTION.

IN conjunction with the 1952 autumn watch for visible migration organised by the Edward Grey Institute (Lack, in press)*, I visited the Kentish Knock Lightship ($51^{\circ}39'24''\text{N.}$, $01^{\circ}40'48''\text{E.}$) which is situated in the Thames approaches in the southern section of the North Sea. My period aboard commenced at 12.00 hours on October 22nd and finished at the next relief at about 10.00 hours on November 5th. Eagle Clarke (1912) spent a month aboard the Kentish Knock in the autumn of 1903. As his dates were from September 17th until October 18th my visit, although nearly 50 years later, can in a sense be regarded as a continuation of his. The vessel is moored well out of sight of land, the nearest points being at North Foreland, Kent, and the Naze, Essex, both of which are 22 miles away. The Dutch coast is about 90 miles due east at the estuaries of the Rhine, Schelde and Maas, and the nearest point due north is Southwold, Suffolk, about 50 miles away.

Bird observation from a lightship presents a number of difficulties not encountered at shore stations. The small size of the vessel allows it to be much influenced by the continuous motion of the sea, and when rough seas combine with strong winds and driving rain, observation of small Passerine migrants, particularly single birds, is by no means easy. Large birds and flocks of small birds are not as difficult to see. When visibility is reduced to less than three miles it is necessary to sound the fog-horn, at which times I found it impossible to concentrate on watching birds, so loud was its wail. The vessel is equipped with a revolving lantern which throws out three white beams, to which under certain conditions many birds are attracted. During the day the small size of the vessel does not appear to deflect the main flocks of passing migrants. Thus all directions observed are likely to be true directions, except in the case of exhausted birds which came aboard.

Unfortunately during the fortnight I was on the Kentish Knock

* The present paper was written simultaneously with another by Dr. David Lack describing the whole watch of which Mr. Owen's observations formed a part. Certain details of general application have consequently been shortened here and will receive fuller treatment in Dr. Lack's paper which will be published in a forthcoming number.—EDS.

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the wind remained westerly and was usually of force 4 or more. These conditions prevailed over the whole of the southern part of the North Sea during this period, and the lack of easterly winds prevented an interesting comparison from being made. The relationship between weather and number of the three more abundant migrants, the Starling (*Sturnus vulgaris*), the Chaffinch (*Fringilla cœlebs*) and the Skylark (*Alauda arvensis*) is shown in Table 1. In the period of the watch the wind had little effect, except on October 28th and 29th when no Passerines at all were seen during strong S.W. gales. Apart from this, rather more birds were seen on days with sunny weather in the early morning than on days with overcast mornings. Doubtless the scarcity of migrants on October 30th was due to the gales of the two previous days, which probably caused a temporary hold-up of migration in the area. Misty conditions by day did not seem to hinder the birds from moving in a fixed direction nor was there an increase in the number of birds which came aboard.

TABLE 1: THE INFLUENCE OF WEATHER ON NUMBERS OF STARLINGS, SKYLARKS AND CHAFFINCHES.

Date	Wind direction and force (Beaufort scale)	General weather conditions (morning)	Numbers passing in best hour		
			Starling	Skylark	Chaffinch
Oct. 23	S.-W.N.W. 5-4	Cloudy until 10.00 hrs. then sunny	3	2	0
Oct. 24	S.W. 5-6	Squally, long bright periods	2	0	0
Oct. 25	W.S.W. 5-6	Mainly fine, squalls at times	93	2	36
Oct. 26	W.S.W. 4	Fine	17	0	0
Oct. 27	S.S.W. 6	Cloudy, drizzle at times	356	0	400
Oct. 28	S.W. 6-7	Cloudy, some rain	0	0	0
Oct. 29	S.W.-W.S.W. 6-8	Cloudy, bright periods	0	0	0
Oct. 30	W. 4	Fine	12	0	0
Oct. 31	N.W.-N.N.W. 6-4	Mainly fine	409	50	0
Nov. 1	S.W.-N.N.W. 4	Low cloud, rain	13	9	0
Nov. 2	N.W.-S.W. 3	Fine at dawn, cloudy later	921	41	50
Nov. 3	N.N.W.-N.W. 7-5	Fine	81	70	0
Nov. 4	S.W.-S.S.W. 4-5	Cloudy, bright periods in early morning	892	9	27

By day the main flocks travelling west appeared quite suddenly around 09.00 hours, presumably having set out at dawn. Before 08.00 hours scattered flocks going west were apparently the remnants of a much larger nocturnal movement. Southward-going birds, which had probably set out from East Anglia, were seen earlier.

(2) MOVEMENTS OF STARLINGS.

As at the other stations (Lack, in press) the Starling was the most numerous species, and except on the two days of strong

S.W. gales birds were seen daily, but numbers varied considerably. The general direction taken by Starling flocks was west but as shown in Table 2 there was some daily variation. These variations in flight direction perhaps indicate that different populations of birds were involved on different days, for, except on one day, the flight direction was independent of wind direction. However, on November 2nd the wind backed slowly during the day from N.W. to S.W. and the direction taken by the migrating flocks tended to change correspondingly to some extent (though not entirely, as many flocks continued west). The results of this day's observations are summarized in Table 3. The change in wind direction must have been encountered by many of the Starlings when they were over the sea and these observations perhaps mean that the birds orientate themselves partly by the wind. November 2nd was cloudy, except at dawn, and possibly Starlings were unable to get a bearing from the sun and therefore had to depend to some extent on wind direction.

TABLE 2: DIRECTIONS TAKEN BY STARLING FLOCKS ON GOOD DAYS.

<i>Direction of Flight</i>	<i>Oct. 27</i>	<i>Oct. 31</i>	<i>Nov. 1</i>	<i>Nov. 2</i>	<i>Nov. 3</i>	<i>Nov. 4</i>
S.W.	0	0	2	3	0	7
W.S.W.	0	0	1	5	0	3
W.	23	6	8	53	11	43
W.N.W.	10	11	0	2	2	0
N.W.	2	10	2	0	2	0
N.N.W.	0	1	0	0	0	0

TABLE 3: CHANGE OF FLIGHT DIRECTION OF STARLING FLOCK WITH CHANGE OF WIND DIRECTION ON NOVEMBER 2ND.

<i>Time</i> G.M.T.	<i>Wind</i> (Force 3)	<i>Direction of Flight</i>			
		W.N.W.	W.	W.S.W.	S.W.
09.05-10.20	N.W.	1	22	0	0
10.27-10.55	W.N.W.	1	12	0	0
11.00-11.35	W.	0	9	0	0
11.35-14.05	W.S.W.	0	7	3	1
14.15-15.47	S.W.	0	3	3	1

Assuming that most diurnal migrant Starlings set off from the Continent about dawn it is possible to estimate the time spent in making the sea crossing. At the Kentish Knock the first of the Continental departures usually appeared just after 09.00 hours; therefore the time taken to make this journey of rather less than a hundred miles was about three hours, at a speed of rather more than 30 m.p.h. Wind direction and force seemed to have very little effect on the time taken to make the crossing, but the lack of tail winds during the fortnight prevented a better comparison from being made. The main movement of Starlings was usually over by 12.00 hours, but on some days, notably on October 31st and November 2nd, there were steady streams of birds flying west in small flocks until dusk, when observations ceased.

Starlings flew just above the sea in compact flocks, and dipped over large waves which would decrease wind resistance. On one occasion two birds drifted in the water past the ship. These were completely waterlogged, but still alive. The average flock-size was about 30-40, flocks of 70 were not infrequent and the largest flock was 300. Larger parties were scarcer on days with a wind of force 5 or more, suggesting that the wind broke up Starling flocks as they crossed the sea. Large flocks were more frequent in the morning when the first of the dawn departures appeared. Numbers in each party gradually decreased during the day, falling to a minimum in the late afternoon. Likewise scattered flocks and single birds were a feature of the very early morning movement. On overcast days, flocks of Starlings could be picked out up to half a mile away. There was no evidence of any being deflected by the Lightship, except that, often, as a flock passed, an odd bird broke away and came aboard. In most cases, after spending a short time aboard, they flew off in the correct direction. Sometimes, especially in the afternoon, single birds in an exhausted condition came aboard; these almost invariably died.

(3) MOVEMENTS OF CHAFFINCHES.

Chaffinches were numerous only on October 27th, comparatively small numbers were seen on other days. The most important direction taken by birds passing the Lightship was W.N.W., rather fewer flew west and very small numbers flew N.W. and S.W. Birds were seen when winds were recorded in directions between S.S.W. and N.W. and there was no evidence of flight direction being influenced by wind direction.

On October 27th the first flock appeared at 08.45 hours, ten minutes before the first Starling arrivals. The movement on this day continued until 12.00 hours, after which few birds were seen.

At times single birds appeared on board the Lightship when none were observed passing. This was especially noticeable on October 31st when during the afternoon four individuals appeared at intervals, but no Chaffinches were seen passing the ship that day. This might mean that the birds were flying high out of sight, and agrees with observations in Holland (Deelder, 1949) and at Land's End (Lack, 1952) that this species may set out to sea at a considerable height. Chaffinch flocks seen flew low over the waves and usually comprised 30-50 birds, but flocks of 70, 150 and 200 were seen on October 27th. A few birds which flew west soon after dawn on November 4th were probably stragglers from a larger nocturnal movement. Two males collected were of the central European race *F.c. hortensis*.

(4) MOVEMENTS OF SKYLARKS.

Skylarks were seen passing in a general direction west on eight days during my period on board the Lightship. The

movement varied between S.W. and N.W., the main directions being west and W.N.W. There was also some daily variation, for on October 31st and November 3rd most birds were seen moving west and north of west, whereas on November 2nd the main directions were west and south of west. In addition to the westerly movement there was also a small passage of birds going south. This usually took place in the early morning between 06.00 and 08.00 hours. These birds had presumably departed from the Suffolk coast. The movements of Skylarks as seen from the Kentish Knock are shown in Fig. 1.

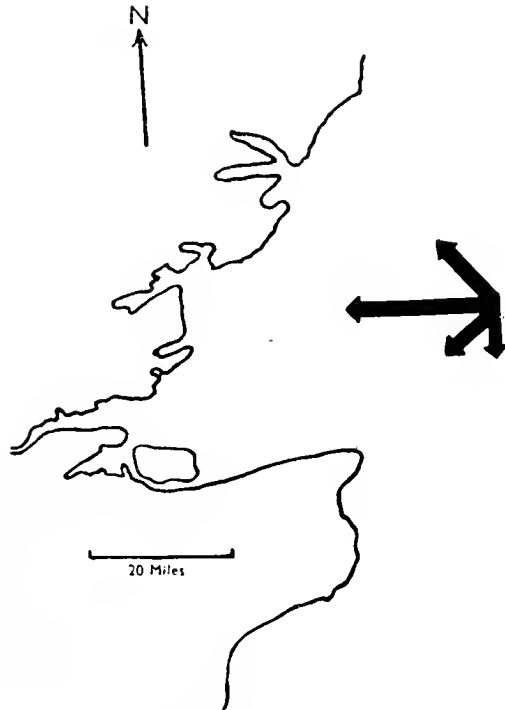


FIG. 1: MOVEMENTS OF SKYLARKS.

It was impossible to obtain peak times for Skylarks flying west. Only small numbers were seen between 07.00 hours and 10.00 hours and there was not a sudden appearance of birds around 09.00 hours as with Starling and Chaffinch. On October 31st the first arrivals were seen at 10.45 hours; the movement then became fairly continuous until sunset. On days when this species was at all numerous the peak passage occurred after 12.00 hours. The maximum numbers observed were on November 3rd when 70 passed in the half hour commencing 14.30 hours. There is little doubt that departure times of migrating Skylarks are highly variable and are not confined to dawn and sunset. Birds which appeared at the lantern soon after dark on one night must have set out during the afternoon. Many Skylarks setting out by day must complete their

journey after dark and birds which arrived at the lantern after 04.30 hours would normally have completed their journey by day.

Unlike the Starling and Chaffinch single birds and small parties were much more numerous than larger flocks. Flocks of over 20 were unusual, the maximum recorded being of 50. Few Skylarks came aboard by day, but single birds sometimes circled the ship before continuing on. All flew very low over the sea.

(5) MOVEMENTS OF THRUSHES.

Since thrushes are usually said to be primarily nocturnal migrants, those seen migrating by day at the Kentish Knock are of special interest. Four species were involved, Blackbird (*Turdus merula*), Song Thrush (*T. ericetorum*), Fieldfare (*T. pilaris*) and Redwing (*T. musicus*). None was seen before October 31st, though it is known that a large movement took place on two or three nights in the third week of October.

Blackbirds were most numerous, and all flew west, except for single birds N.W. and W.N.W. and four S.W. (with four Skylarks). All probably set out during the day as none were seen before 08.35 hours. Rather more passed during the afternoon than during the morning. No large flocks were recorded, the maximum number in a party comprised 7 birds (twice). Single birds often circled the ship and came aboard, these usually departed after resting for a few minutes. The great majority of those seen were males, only one female was definitely identified during the day. Smaller numbers of Song Thrushes and Fieldfares flew west during the Blackbird migration. One party of 4 Fieldfares was accompanied by 2 Redwings and a party of Starlings contained a single Song Thrush. On November 3rd a Fieldfare came aboard during a N.N.W. force 7 gale and set off west after resting a few minutes. Two flocks of 40 and 25 Redwings flew S.S.W. and S.W., otherwise all birds of this species were odd individuals, except for one flock of 12 which flew west on November 4th. The birds which travelled S.S.W. and S.W. might, presumably, have flown direct from southern Scandinavia. As with the Skylark some thrushes must have set out during daylight and completed their journey by night.

(6) OTHER SPECIES.

Other species seen from the Kentish Knock were in much smaller numbers. Of these Rooks (*Corvus frugilegus*) were most numerous and were seen on six days. The directions of flight varied, but the majority flew west, W.N.W. and N.W. Three flocks flew S.W. and a single bird flew S.S.E. The earliest birds appeared at 08.50 hours and a slight peak was reached at 11.00

hours—12.00 hours. The height of flight was very variable, but during strong head winds there was a tendency to fly low over the sea. Often, on reaching the Lightship they gained height and circled once or twice before moving off. A few came aboard and perched on the rigging. Single birds were most common and the maximum number recorded in one flock was 24. Probably a larger migration of Rooks took place as neighbouring lightships reported "very large numbers" on several occasions. One flock of 17 Jackdaws (*C. mouedula*) flew W.N.W. on October 31st, these were the only birds of the species seen.

Small numbers of other species took part in the diurnal movement westwards. These included Meadow Pipits (*Anthus pratensis*), Tree Sparrows (*Passer montanus*), Goldcrests (*Regulus regulus*), Swallows (*Hirundo rustica*), a Sparrow Hawk (*Accipiter nisus*), a Kestrel (*Falco tinnunculus*), a Stock Dove (*Columba œnas*) and 7 Lapwings (*Vanellus vanellus*). The direction of flight was west, except in the case of Meadow Pipits which varied between N.W. and S.S.W., the Sparrow Hawk which flew W.S.W. and the Kestrel S.W. On two occasions Lapwings accompanied flocks of Starlings. Tree Sparrows were possibly travelling high out of sight as on several days single birds appeared on board when none was observed passing. This agrees with the observations at Land's End that this species may travel at a considerable height (Lack, 1952).

The trickle of south-going birds, usually seen in the early morning, and already mentioned under Skylark, comprised also small numbers of Meadow Pipits, Great Tits (*Parus major*), Swallows, Linnets (*Carduelis cannabina*) and a Short-eared Owl (*Asio flammeus*). The Short-eared Owl and one Great Tit came aboard before moving off in a general southerly direction. It seems likely that most of these birds had departed from East Anglia. A few Meadow Pipits also flew east and north and this species was thus recorded travelling in all the major compass directions.

(7) MOVEMENTS OF SEA BIRDS.

Normally only a few Lesser Black-backed Gulls (*Larus fuscus*), Common Gulls (*L. canus*) and Kittiwakes (*Rissa tridactyla*) were seen around the ship. There were also some Razorbills (*Alca torda*), Guillemots (*Uria aalge*), Puffins (*Fratercula arctica*), Red-throated Divers (*Colymbus stellatus*) and Common Scoters (*Melanitta nigra*), especially near the sand-banks to the west of the ship where the water is rather shallow.

The Kentish Knock is situated too far out to sea to come within the feeding area of the Black-headed Gull (*Larus ridibundus*), and up to November 3rd only three were seen, two of which flew west. On November 3rd a large movement took place, commencing

ing at 09.15 hours and reaching a peak of 30 birds an hour at 11.00 hours. Small parties and single birds, most of which were adults, flew west and slightly north of west all day. All travelled in a fixed direction low over the sea and none was seen feeding. The movement continued on November 4th but fewer birds were involved. Outward bound to the Kentish Knock in the relief ship *Triton* I did not see Black-headed Gulls more than four miles off-shore. On November 5th I saw small numbers feeding in the vicinity of the Barrow Deep Lightship which is stationed eight miles off Felixstowe.

Lesser Black-backed and Common Gulls moved in a general direction south on some days. On October 23rd Common Gulls flew west and Lesser Black-backs south, about 80-90 of each species passed during the morning. Parties varied from 2 to 10 and only rarely were the two species seen in company, and again the great majority were adults. Smaller numbers passed between S.W. and S.E. on other days. The most spectacular of the southward moving sea-birds was the Kittiwake, large numbers of which were seen on certain days. Only a few passed between October 22nd and 26th, more occurred on 27th, few on 28th and 29th and more again on 30th. October 31st was, however, the best day as many hundreds passed south in small parties, including a large proportion of juveniles. Few appeared on November 1st, but birds were common again on 2nd and 4th. Kittiwakes probably also move at night as the lightship-men have sometimes seen them around the lantern on misty nights.

Arctic Skuas (*Stercorarius parasiticus*) flew south daily, usually singly, but two parties of three were seen. All were dark phase examples or juveniles. Two Pomarine Skuas (*S. pomarinus*) and a Great Skua (*S. skua*) also flew south. Gannets (*Sula bassana*) passed south in small numbers, the most for one day being twelve. None was seen fishing and all except three were adults. Eagle Clarke (1912) records a similar movement of adult Gannets in September and October, 1903. The three common species of auk were seen passing south, the great majority of which were Razorbills. October 31st was a good day for auks and many hundreds, in parties up to twelve, were seen. On November 4th many Razorbills participated in a great southerly movement of sea birds and outnumbered Kittiwakes.

Other species were occasionally seen, including 30 Eiders (*Somateria mollissima*), 10 Seaup (*Aythya marila*), 2 Brent Geese (*Branta bernicla*), 4 Dunlin (*Calidris alpina*), a Sanderling (*Crocethia alba*), 6 other small waders that were possibly Dunlin, and 3 Fulmars (*Fulmarus glacialis*). All of these were moving west or south of west, except the Eiders which flew N.W. The directions taken by the more numerous species of sea birds are shown in Fig. II.

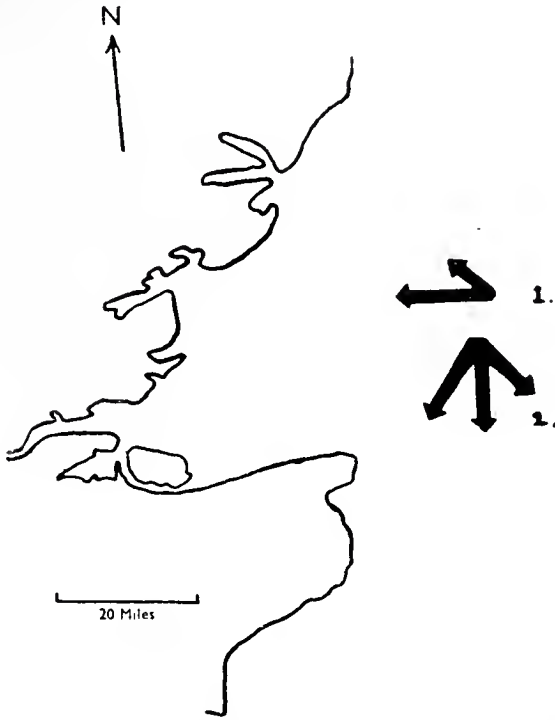


FIG. II: 1. MOVEMENTS OF BLACK-HEADED AND COMMON GULLS.
2. MOVEMENTS OF RAZORBILLS, KITTIWAKES AND GANNETS.

(8) MIGRATION AT NIGHT.

At the Kentish Knock in late October and early November, 1952, the number of birds migrating at night probably equalled if it did not exceed those moving by day. Migrants appear at the lanterns of lightships and lighthouses only when the weather is overcast or misty, particularly when the actual moisture content of the air is high. On clear nights many birds may migrate undetected, as instanced on the night of October 31st—November 1st.

On October 31st Starlings, Skylarks and a few other species travelled west all afternoon until sunset, when observations had to be discontinued. Weather conditions were good, with a moderating wind and clear sky. The early part of the night was clear and starry and I did not expect birds to appear at the lantern. However, at midnight the watch reported that the wind had dropped and that the sky had suddenly become overcast and that birds had already arrived at the lantern. These I found to be Starlings and Skylarks and as I watched many more arrived, with small numbers of other species. Numbers increased rapidly and by 01.30 hours the weather had deteriorated and light rain had begun to fall. By this time the rigging, masts, decks, in fact all available perching places, were covered with resting birds.

Thousands more circled the lantern and flew up the beams of the revolving light. Many hit the lantern glass resulting in a terrific mortality. At times stunned and dead birds dropped into the sea and onto the deck continuously. Many hundreds, possibly thousands, must have been lost that night. Just before dawn birds were so numerous that as I stepped on deck from below, my head and shoulders were covered with birds seeking new resting places. The great majority were Starlings and Skylarks with smaller numbers of Blackbirds, Fieldfares and Song Thrushes, and two Short-eared Owls. Other species were probably present, but identification of odd individuals was in most cases difficult unless specimens were caught. The following morning a single Chaffinch was found on board, so presumably this species also participated in the movement. At dawn the weather became steadily worse with driving rain and a freshening westerly wind, but despite this, great numbers of birds left the Lightship and set off west, many circled several times before doing so. Conditions then became so bad that it was necessary to sound the fog-horn, which caused almost all the remaining birds to disappear.

This night's observations are of particular interest since it is unlikely that many birds would have set out in the type of weather they met en route. Assuming that the origin of these birds was similar to that of those passing by day, it would appear that departures are not necessarily confined to the period around sunset. Birds which appeared at the lantern between 02.00 hours and dawn had presumably set out well after dark.

Birds appeared at the lantern on other nights when similar conditions prevailed, but not in such large numbers. Starlings were most common and early each morning flocks set out from the lightship for the west. Skylarks passed by all afternoon on November 2nd and as soon as it became dark they appeared at the lantern. Numbers were small and probably did not exceed twelve at any one time. A few Chaffinches also appeared at the lantern on this occasion. In the early hours of October 28th during rough weather and high seas, a few Goldcrests and unidentified finches came to the light together with about 40 Starlings.

The nights of October 20th-21st and 21st-22nd (before my arrival at the Lightship) were comparable with October 31st-November 1st. According to the lightship-men the vessel was completely covered with birds, the majority of which were thrushes. Each morning dead or dying birds littered the deck. Some were set aside for my examination and included Redwings, Song Thrushes, Starlings, Meadow Pipits, Skylarks, a Goldcrest, a Willow Warbler (*Phylloscopus trochilus*) and a Water Rail (*Rallus aquaticus*). There had also been many "Chaffinches," but later I discovered that these were not distinguished from

Bramblings (*Fringilla montifringilla*) a number of which were feeding from scraps in the galley when I arrived on October 22nd. These two nights and other nights were similar at all the lightships in the southern part of the North Sea and Channel and presumably a large movement took place.

From the preceding account it will be apparent that many species of diurnal migrants also took part in the night movements and *vice versa*. Moreover many individuals must have set off at such a time that they would have to complete their journey after dark. Others which set off during the night would arrive in the morning. As already shown this was especially so with the Skylark and Starling at the Kentish Knock. Eagle Clarke (1912) had similar experiences at the Kentish Knock and at the Eddystone Lighthouse. He records large numbers of Chaffinches at night and such birds as Redstart (*Phœnicurus phœnicurus*) and Wheatear (*Oenanthe œnanthe*) by day. The Chaffinch is usually said to be diurnal and the Redstart and Wheatear nocturnal when migrating. Likewise records in the B.O.C. Migration Reports (1905-1913) show remarkably incomplete differences between nocturnal and diurnal migrants. I can only conclude that in the past too much emphasis has been placed on such differences, as many species seem to move both by day and night.

ACKNOWLEDGEMENTS.

I am grateful to the Elder Brethren of Trinity House, London, for permission to spend a fortnight on the Kentish Knock Lightship and to the staff of Trinity Depot, Harwich, for making all necessary arrangements. I am particularly indebted to Mr. N. Brundle, Master of the ship, and his crew for much co-operation during my period aboard. Dr. David Lack has read this paper through in manuscript and I am grateful to him for many useful suggestions.

(10) SUMMARY.

1. The Kentish Knock Lightship, stationed in the southern section of the North Sea, was visited in late October and early November, 1952, for the purpose of studying the east-west movement of migrant Passerines. The visit coincided with a period of westerly winds and migration was thus witnessed only during this type of weather. The effect of wind direction and force in relation to number of birds is considered.

2. Starlings were seen on all but two days and were the most numerous species. Chaffinches and Skylarks were next in order of abundance, other species being much scarcer. In addition to the main movement west a few birds flew south. These had probably originated in East Anglia. Some nocturnal species (e.g. thrushes) were seen migrating by day.

3. On certain days large numbers of sea-birds were seen migrating. Of these Black-headed Gulls and some Common Gulls flew west, and Kittiwakes, Lesser Black-backed Gulls, Razorbills, Gannets and smaller numbers of other species flew south.

4. Many Passerines also travelled at night, but these were only seen at the ship's lantern when the sky was overcast and the moisture content of the air high. Birds might set out in clear conditions and meet unfavourable weather en route. Most of the species seen at night were the same as those seen during the day. Day and night movements showed considerable overlap and it is concluded that many late autumn migrants may be nocturnal or diurnal.

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AMERICAN ROBIN ON LUNDY.

BY

PETER DAVIS (*Lundy Bird Observatory*).

(Plate 59)

AN American Robin (*Turdus migratorius*) was present on Lundy from October 27th to November 8th, 1952. It was probably first seen on October 25th, by one of the islanders.

FIELD OBSERVATIONS.

On the morning of October 27th I found a strange thrush in a gully choked with willows and brambles, on the terraced eastern slopes of the island. It was feeding avidly on blackberries, and tolerated my approach to within ten yards, remaining motionless when a few Redwings (*T. musicus*) flew out of the bushes. With its blackish head, dark olive-brown upper-parts, pale brick-red under-parts, rather rotund build, and upright stance, the bird somewhat resembled an oversized cock Stonechat (*Saxicola torquata*). There was an incomplete white ring around the eye. When disturbed the thrush gave a low "tchook, tchook, tchook" call hardly distinguishable to my ears from the notes of an uneasy Blackbird (*T. merula*).

Dislodging the bird from the gully proved a difficult task, but eventually it flew southwards along the main terrace, and was taken in one of the Heligoland traps. After examination and ring-

ing at the Old Light, the Robin was shown to the other resident bird-watchers, F. W. and Miss Mary Gade, and John Ogilvie. Later, photographs were taken by Kenneth Monk (one of these is reproduced on plate 59), and the bird was afterwards released near the Hotel.

The bird had returned to the terraces, half a mile from the Hotel, on the 28th, and remained there on the 29th, but subsequently it was seen only on the top of the island, near Quarterwall Pond. Here it sought food on the close-cropped sward, with Redwings and Blackbirds. Earthworms seemed to be the main attraction. Though not confiding, the American Robin seldom flew as far as the other thrushes when people passed along the track. On one occasion F. W. Gade saw it join a party of Fieldfares (*T. pilaris*) flying away over the airfield, but soon it dropped out and returned to the Quarterwall.

Another note was heard several times, a low "tseep" or "sssp," given in flight or from a vantage point on one of the stone dykes.

DETAILED DESCRIPTION.

The following description was taken from the bird in the hand:

Upper-parts: Head very dark brown, feathers with olive-brown tips; a short patch above, and another below and behind the eye, white. Rest of upper-parts dark olive-brown, slightly greyer on the rump. *Wings*: dark brown, outer edges of primaries, secondaries, primary and greater wing-coverts pale greyish. *Tail*: dark brown, the two outer feathers on each side with small white tips. *Under-parts*: chin and throat white with dark striations, particularly at the sides. Upper breast, sides of lower breast, flanks, axillaries and under wing-coverts pale brick-red, rather paler on under-wing coverts; feathers with pale greyish tips on upper breast and flanks, whitish tips on sides of breast. Centre of lower breast and belly white; under tail-coverts white, feathers with grey-brown bases forming a patch in the ventral area. *Soft parts*: bill dark brown with yellow gape; eyes dark brown; legs and feet dark brown.

Wing-formula: 1st primary 6 mm. shorter than primary coverts; 3rd and 4th longest, 2nd 7 mm. shorter 5th 2 mm. shorter, 6th 9 mm. shorter. 3rd to 6th emarginated on outer web.

The outer rectrices were 5 mm. shorter than the other ten.

Measurements: Wing 130 mm.; tarsus 33 mm.; bill from feathers 18.5 mm.; weight 69.8 gms. at 12.30 hours.

Judging from the colour of the upper-parts, the paleness of the breast, the ill-defined white orbital ring, the smallness of the white tips of the outer rectrices, and the colour of the bill, the bird was in first-winter plumage.

The dark brown, but not blackish tail, suggests that this specimen was of the Eastern race (*T. m. migratorius*) rather than of the Northern (*T. m. nigrideus*). The former breeds north and east of a line from Alaska to Georgia, and although replaced by the northern form in north-east Quebec, Labrador, and Newfoundland, it extends as far east as Nova Scotia and New Brunswick (see Bent, 1949).

THE METEOROLOGICAL POSITION.

I am indebted to Kenneth Williamson (personal communication, 1952) for his comments on this aspect of the occurrence. He has stated that "the present case, arguing on the concept of migrational drift—a drift downwind across an inhospitable zone—seems . . . just about as clear-cut a case as one could hope to get."

On October 21st and 22nd, the eastern two-thirds of North America were dominated by two major pressure systems—a great anticyclone covering the United States, and a rapidly-developing depression centred over Hudson's Bay. During these two days the pressure-systems were contiguous in the Great Lakes—St. Lawrence region, and a complementary south-westerly airstream flowed through this area to the Atlantic coasts. This airstream could well have drifted migrants out of Upper Canada into the Maritime Provinces.

For a lucid summary of the situation on October 23rd and 24th, I quote Williamson's remarks: "The mid-day weather-map of 23rd shows the Hudson's Bay depression's warm sector sweeping across the estuary of the St. Lawrence, the wind westerly ahead of the cold front. This is exactly the kind of set-up which, with depressions moving in the opposite direction up the North Sea (which is not much bigger than the mouth of the St. Lawrence) deposits hundreds of migrants from the Continent at Fair Isle. This 'low' may well have been important in the present case. The picture in the Atlantic itself is simple enough from 23rd to 25th, a vast depression centred about 500 miles south of Iceland governing the weather across the whole width of the ocean on 23rd, and over the eastern two-thirds on 24th. Any bird which got adrift to sea beyond Newfoundland would be in the eastward-flowing airstream on the south side of this depression, with force 6 to 8 winds to help it, and no complications until it reached the British Isles."

THE TRANSATLANTIC FLIGHT.

The distance from the St. Lawrence estuary to Lundy by this down-wind route is about 3,200 miles, with an actual sea-crossing of 2,800 miles from Cape Race. The average wind-speed along this track, on October 23rd-25th, was in the region of 35 m.p.h. To this must be added the flight-speed of an American Robin, which would be about 35-40 m.p.h. It seems reasonable to postulate an average ground-speed in excess of 70 m.p.h., so that the Atlantic crossing could have been made in less than forty hours.

There is no reason to believe that such a flight would be beyond the powers of a bird of this size, though undoubtedly its condition would be critical by the time a landfall was achieved.

The weight-losses sustained by migrating birds have been the subject of much work in recent years by Williamson (1952) and others, and it has been shown that small Passerines may lose 20-30 per cent of their initial weight on long sea-crossings, without any apparent ill-effect. Such losses are rapidly made good when suitable feeding-places are found. A bird's condition only becomes critical when the muscle and liver glycogen and accumulated fat have been consumed, and inroads are made upon the protein of the muscle-tissue.

The weight of a Blackbird of similar size and build to this American Robin and passing through Lundy in the autumn is usually in the region of 90 to 100 gms. The actual weight of the Robin when trapped, two days after the probable time of arrival on the island, was, however, only 69.8 gms. Making due allowance for recuperation, the weight-loss undergone may have been as great as 40 per cent. These figures are in themselves very strong evidence that the bird had recently completed a flight of very long duration.

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[There can be no doubt that this bird was correctly identified. The question is, how did it get to Lundy? Recent increases in our knowledge of drift migration make it opportune to reconsider the status of transatlantic species casually occurring in the British Isles, and of the American Robin in particular. Transatlantic movement from west to east has been confirmed by ringing recoveries not only of such obviously well-adapted species as Caspian Terns (*Hydroprogne caspia*) and Arctic Terns (*Sterna macrura*) from the United States, Pintail (*Anas acuta*) from Labrador and White-fronted Geese (*Anser albifrons*) from Greenland, but also for such a small Passerine as the Wheatear (*Oenanthe oenanthe*) breeding in south-west Greenland, which was already known to pass through this country regularly in some numbers. The occurrences of such American species as the Pectoral Sandpiper (*Calidris melanotos*), Lesser Yellowlegs (*Tringa flavipes*), American Bittern (*Botaurus lentiginosus*) and Yellow-billed Cuckoo (*Coccyzus americanus*) are equally beyond suspicion, and the frequency of such records clearly shows that there is nothing exceptional or inherently improbable in transatlantic crossings by many different species of birds, including some which are certainly not more powerful than *Turdus migratorius*. The successful establishment of a breeding colony of Fieldfares (*Turdus pilaris*)

in Greenland after a mass flight from Norway in 1937* is much more remarkable. As Mr. Davis shows, the conditions at the time of the Lundy occurrence were peculiarly favourable to such a crossing, just as they were peculiarly unfavourable to Leach's Petrels (*Oceanodroma leucorhoa*) whose great "wreck" occurred simultaneously, and there is no reason to suspect an escape from captivity. We therefore unhesitatingly accept this record as constituting a good ground for adding the species to the British List, and for reconsidering in due course *The Handbook's* statement (vol. II, p. 141) that previous American Robins taken in the British Isles "had no doubt escaped from captivity." It should be noted that both A. C. Bent (*Life Histories of N. American Thrushes, Kinglets and their Allies*, p. 45) and Niethammer (*Handbuch der Deutschen Vogelkunde*, vol. 1, p. 385) treat the occurrence of this species in the British Isles and in other parts of Europe as fully established.

Elsewhere in this issue (p. 378) we include a note on the record in Ireland in 1951 of a Red-eyed Vireo (*Vireo olivaceus*), another species thus given a claim to being regarded as a genuine straggler across the Atlantic. We are hoping in due course to publish a plate in colour by Roger Tory Peterson of the American Robin and the Red-eyed Vireo and these records will be further discussed in a forthcoming paper by W. B. Alexander and R. S. R. Fitter reviewing the past reported occurrences of American land-birds in Western Europe.—EDS.]

* *Vide* the account by Finn Salomonsen in *Proc. Xth. Int. Orn. Congr. Uppsala*, pp. 515-526.

SOME PHOTOGRAPHIC STUDIES OF THE AMERICAN ROBIN.

Photographs by ALLAN D. CRUICKSHANK AND HAL. H. HARRISON
from U.S. NATIONAL AUDUBON SOCIETY.

(Plates 56-59).

THE American Robin (*Turdus migratorius*) has of course no particular connection with its Old World namesake (*Erithacus rubecula*), other than a certain similarity in the colour of the breast which doubtless caused the homesick early colonists to call it after the bird so familiar to them in Europe. Various red-breasted species in other parts of the world have been similarly treated by English settlers. The Robin is, on the other hand, the American counterpart of the European Blackbird (*T. merula*), the two species although quite different in plumage being very similar in many of their habits, and particularly in their gait, stance and shape (see plate 56). This will be readily understood by those who



AMERICAN ROBIN (*Turdus migratorius*).

(Photograph by ALLAN D. CRUICKSHANK from U.S. NATIONAL AUDUBON SOCIETY).

This photograph shows well the resemblance in outline and stance that there is between this species and the European Blackbird (*T. merula*). (See page 368).



AMERICAN ROBIN (*Turdus migratorius*).
ADULT WITH YOUNG IN THE NEST.

(Photograph by ALLAN D. CRICKSHANK from U.S. NATIONAL AUDUBON SOCIETY).

Note the black head with the characteristic white markings round the eye, and the black and white pattern of the chin. The whole of that area of the under-parts that appears grey in this photograph is a rich reddish-brown which shades to a whitish colour in the region of the belly and the vent.



AMERICAN ROBIN (*Turdus migratorius*),
YOUNG JUST OUT OF THE NEST.

(*Photograph by ALLAN D. CRICKSHANK from U.S. NATIONAL AUDUBON SOCIETY*).
The resemblance to the young of various European thrushes is obvious. The characteristic head-markings of the adult American Robins are already represented. In the juvenile plumage the ground colour of the breast varies from a yellowish-buff, sometimes even whitish, to a pale brown tinged with red.



NEST AND EGGS OF AMERICAN ROBIN (*Turdus migratorius*).

(Photograph by HAL H. HARRISON from U. S. NATIONAL AUDUBON SOCIETY).

The nest, not unlike that of the Blackbird (*T. merula*), is typically built of coarse grasses and twigs heavily reinforced with mud and lined with finer grasses. The eggs are unmarked blue.



THE AMERICAN ROBIN (*Turdus migratorius*) ON LUNDY.

(Photographed by KENNETH MONK).

The characteristic white marks round the eye can clearly be seen.
(See pages 364 and 368).

examine the sections on the Robin in A. C. Bent's *Life Histories of North American Thrushes, Kinglets and their Allies* (U.S. Nat. Mus. Bull., 196 (1949): 14-66).

According to Bent, the breeding range of this species extends from the extreme north of the American continent (Alaska, Yukon, Mackenzie, Quebec) throughout Canada and most of the United States down to Oaxaca and western Vera Cruz in central Mexico. To the northern parts of its range the bird is only a summer visitor and during the winter months it for the most part keeps south of a latitude roughly 40° N., except in the west where it regularly winters as far up as British Columbia; at this season it extends further south to Guatemala and is found in certain coastal states where it is absent in the breeding-season. In the autumn and winter the species is often markedly gregarious and roosts sometimes contain vast numbers. Bent quotes one of an estimated 50,000 birds in a cypress swamp in Florida.

Only in one respect apart from the colour of the breast does this bird resemble the European Robin and that is in the familiarity and popularity with which it is known throughout its range. With its black head, white around the eye, black-and-white streaked throat and yellow bill, with its slate-coloured upper-parts, more blackish wings and tail, and rich brick-red under-parts shading to a whitish colour in the region of the belly and the vent, it is a most striking bird. An impression of the distribution of these colours can be got from the adult in plate 57. The characteristic orbital marks can also be seen in the photographs of the Lundy bird (plate 59, lower). The female is browner above and paler below than the male. The juveniles (in which the white marks around the eye are already represented) shown in plate 58 are so obviously young thrushes. As an examination of plate 59 (upper) will show, the nest is typical of the Turdidæ and is quite similar to that of the Blackbird, being built of coarse grasses and twigs heavily reinforced with mud and lined with finer grasses. It is interesting to note that like the Blackbird the American Robin often uses the same nest for successive broods and in successive years—Bent (*loc. cit.*, pl. 2) includes a photograph by Hugh M. Halliday of a nest in which at least two broods a year had been raised in six successive seasons.

W. M. Tyler writing in Bent (*loc. cit.*) says that the Robin impresses him "as a bird of a nervous, highly excitable character, ever on the point of flaring up to an excess of emotion amounting almost to uncontrolled hysterics. . . . He seems always apprehensive, often standing alert and restless, wing tips lowered or twitching, head high, and tail pumping, on the watch for danger, and the least alarm upsets his equilibrium and startles him into vociferous, unrestrained remonstrance." How much this recalls the Blackbird!

I.J.F.-L.

NOCTURNAL MIGRATION OF THRUSHES IN IRELAND.

BY

P. W. P. BROWNE.

OBSERVATIONS on both day and night migrants, made near Dublin in the autumn of 1952, have already been briefly reported elsewhere (Browne, 1953). Two conclusions on the nocturnal migration of thrushes seem worthy of more detailed consideration. These are that (i) a line of concentration of movement was found to exist on the coast and (ii) the proportions of the various species of thrush taking part were very different from those reported by R. M. Barrington at the end of last century.

TOPOGRAPHICAL CONCENTRATION.

Fig. 1 shows the general area concerned. Most observations relevant to the present paper were made at Dun Laoghaire and a plan is given in Fig. 2. I investigated the nocturnal passage of thrushes by counting the number of calls heard and I listened for varying periods (15 to 202 minutes) on sixteen nights between October 18th and November 15th and also made notes of any calls heard during the rest of the autumn. Data obtained on six of these nights are given in Table I. The localities are shown in Fig. 2. Calls of all thrush species were summed for this table. The nights concerned were ones during which I listened at more than one place. I alternated my position between the two or three

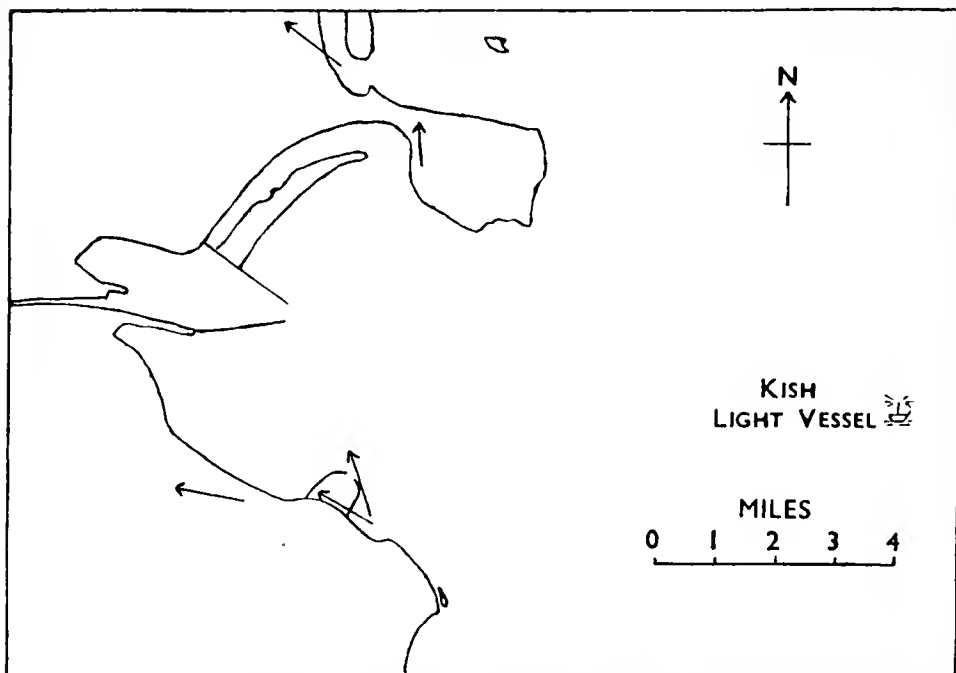


FIG. 1: DUBLIN BAY—SHOWING DIRECTIONS OF DIURNAL MOVEMENT.

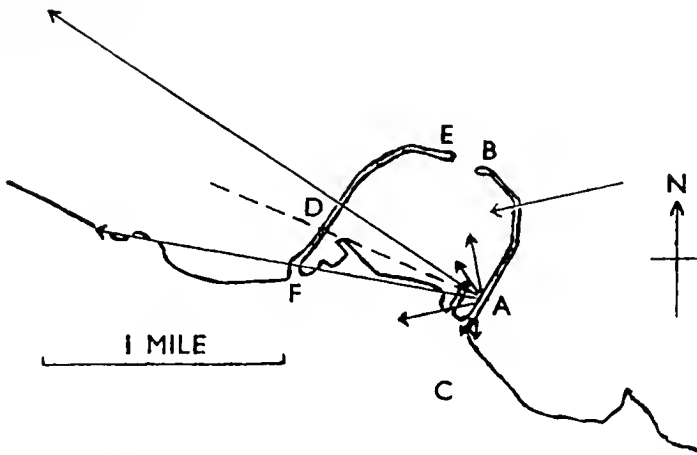


FIG. 2: DUN LAOGHAIRE—SHOWING NOCTURNAL POINTS OF OBSERVATION AND DIRECTIONS OF MOVEMENT.

points under comparison quite frequently and spent only comparatively short intervals at each, in order to eliminate as much as possible the effect of variation in density of migration according to time.

It is clear from Table I that the points A and D were consistent on all nights tested in giving a greater frequency of call than points to landward (*i.e.* C and F) and to seaward (*i.e.* B and E). Moreover, though this cannot be shown in the table, the call frequencies at A and D were not only higher than at B, C, E and F, but they were the highest found in the whole area. It seems reasonable to assume that A and D lay on a line of concentration of calls.

TABLE I: CALL FREQUENCY AT DIFFERENT POINTS, DUN LAOGHAIRE.

Date	On line of concentration			Off line of concentration		
	Locality	Minutes of listening	Average calls/min.	Locality	Minutes of listening	Average calls/min.
November 1-2	A	85	8.52	B	35	3.05
3-4	D	95	2.36	F	20	1.40
				E	10	1.70
7-8	D	60	1.55	E	45	0.40
8	A	30	6.83	C	10	2.60
12	A	15	16.26	C	10	4.90
13	A	35	1.71	C	15	0.47

I obtained evidence of a different kind on the night of November 1st. Thin broken cloud was brightly lit by a full moon and I could

see some of the passing thrushes. It was possible to follow birds with the eye for a considerable distance and, with the help of a luminous compass, I took the direction (to the nearest $22\frac{1}{2}^{\circ}$ point) of c. 58 birds in flight over A, during a period of about ten minutes at the height of the passage. Numbers in each direction are shown in Fig. 2. The length of the arrow shaft (vector) is proportional to the number counted in that direction. The only other party (7 birds) seen that night were flying in the direction and over the place indicated by the other arrow in Fig. 2. The direction of the vector resultant at A is shown by a dotted line. It passes through D. Arrows drawn in Fig. 1 show, for comparison, the directions of heavy *diurnal* thrush movements observed in the area in December, 1952 (from notes of Messrs. D. Jackson, J. Simms, J. Weaving and myself).

Thus I found that a line of concentration of calls, AD, coincided with the average direction of flight at a point (A) on that line. The most economical hypothesis to explain this is that AD marked a line of concentration of flying birds. Fig. 1 shows that this is approximately parallel with the coastline in the harbour and so I believe the evidence given goes far towards establishing the existence of a coasting stream of thrushes.

The work of Lowery (1951) was rather inconclusive on a similar problem. I would suggest that, with calling migrants, auditory data may be a valuable supplement to data obtained by sight.

THE SPECIES INVOLVED.

I classified calls at night according to my knowledge of calls by day. On this basis, four species were distinguished (i) the Redwing (*Turdus musicus*) by its characteristic "seep"; (ii) a quite different short sharp "tip" from the Song Thrush (*T. ericetorum*); (iii) a note resembling that of the Redwing but thinner and more tremulous, sometimes repeated so as to be di- or tri-syllabic, which I ascribed to the Blackbird (*T. merula*); and (iv) the chatter of the Fieldfare (*T. pilaris*). Each call I heard could be assigned to one of these, though some were between (i) and (iii) in quality and I had to judge to which they most nearly approximated. It is likely however that this classification is too simple and too ready. *The Handbook* (vol. ii, p. 108) describes a soft prolonged "seeh" from the Fieldfare. And Mr. A. Darlington informs me that the Song Thrush has a call very like that of a Redwing.

Consequently, in the following notes, the "species" mentioned really refer to these four calls. But it will be shown that relative numbers, judged by the calls, have a fairly close correspondence with quite independently established data.

TABLE II: DURATION AND INTENSITY OF MIGRATION AT DUN LAOGHAIRE.

	<i>First</i>	<i>Heard on more than 60% of nights</i>	<i>Last</i>	<i>Total calls counted</i>	<i>Greatest no. in one hour</i>
Redwing ...	Sept. 30	Oct. 14-Dec. 15	Dec. 28	2,884	568
Song Thrush ...	Oct. 20	Nov. 1-14	Dec. 8	c. 570	c. 180
Blackbird ...	Nov. 1	Nov. 7-13	Dec. 8	249	63
Fieldfare ...	Nov. 1	Nil.	Nov. 3	c. 200	c. 100

TABLE III: COMPARISON OF CALLS HEARD WITH BIRDS KILLED.

	<i>October 20-21</i>		<i>November 8-9</i>			<i>November 9-10</i>	
	<i>Calls</i>	<i>Killed</i>	<i>Calls</i>		<i>Killed</i>	<i>Calls</i>	<i>Killed</i>
	<i>Dun Laoghaire</i>	<i>Tuskar</i>	<i>Dun Laoghaire</i>	<i>Dublin†</i>	<i>Tuskar*</i>	<i>Dun Laoghaire</i>	<i>Kish</i>
Redwing	59	90	155	317	20	2	2
Song Thrush	4	8	21	7	2	1	0
Blackbird	0	20	55	36	3	3	3
Fieldfare	0	0	0	1	1	0	0

† Data from Mr. A. Mitchell.

* Proportions only. 2000+ birds were found dead on or just around the lighthouse and counted by a very reliable light-keeper who sent in the figures quoted.

Table II summarizes the figures on relative numbers in the Dun Laoghaire area on the basis of calls heard. It can be seen that the passage of the Redwing was both heavier and more prolonged than those of the other species. In Table III calls heard are compared with numbers killed at lights on the same nights. Though there are discrepancies, it can be seen that the figures from Tuskar (which is off Co. Wexford at the south-east "corner" of Ireland, some ninety miles from Dun Laoghaire) amply confirm the high proportion of Redwings involved and those from the Kish (position shown in Fig. 1) bear out my distinction between calls of Redwing and Blackbird. The Tuskar figures were obtained via Major R. F. Ruttledge; specimens from the Kish by myself.

It is of great interest to compare this information with that given in Barrington (1898-1900) who summarized Irish lighthouse records during the period 1879-1899. Most of his Fieldfare figures were from the north of Ireland, which perhaps explains why I heard the species so seldom near Dublin. The other three species, however, appear to enter Ireland mainly in the south-east. On the basis of specimens received, he described the Song Thrush as being about twice as numerous as the Redwing and, in October and

November, the Blackbird as even more numerous than either. Tables II and III bear ample testimony that this was not the case in 1952. I enquired of Major Ruttledge whether or not he considered this reversal to be a general trend in recent years. He writes, "I confess that, purely from a visual point of view, I have always thought it hard to believe that Barrington's conclusion was correct . . . I find it . . . incredible to think that there are more Song Thrush immigrants in autumn and winter than the hordes of Redwings one sees, even allowing for the more secretive and less gregarious habits of the former." He also sent me figures from which I have calculated the average daily total entered in the schedule of Great Saltee Bird Observatory (Co. Wexford) during October and November, 1951. (The island was not manned at the right time in 1952). It should be noted that the Blackbird figure includes some resident breeding stock.

Redwing	Song Thrush	Blackbird
20.4 per day	2.4 per day	27.1 per day

If this evidence is confirmed in subsequent years it will appear that the relative numbers of thrushes entering Ireland has changed considerably since the beginning of the century, the Redwing having replaced the Song Thrush and Blackbird as most numerous. This might be due to an increase in Redwings or a decrease in the other species or both factors acting together.

I would like to acknowledge with thanks the advice of Mr. A. Darlington, Mr. David Jenkins and Major R. F. Ruttledge on the preparation of this paper.

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NOTES.

The winter food and ecological distribution of Greenland White-fronted Geese in Britain.—It has long been evident that the natural habitat and the distribution of the typical race of the White-fronted Goose (*Anser a. albifrons*) and of the Greenland form (*Anser a. flavirostris*) differ considerably. The former is a bird which frequents fresh marshes, pastures and saltings: very often the habitat of the latter in open winter weather is moorland, and peat-bogs such as are found on the west coast of Scotland, western Ireland and central Wales.

Knowing that Whitefronts are grass-eaters I have been much puzzled by the fact that Greenland Whitefronts spend so much

of their time in the most acid type of sphagnum peat-bog. I have now established that one of the principal winter food plants of Greenland Whitefronts during open weather is the root of cotton grass (*Eriophorum angustifolium*). When these geese are using an area of moorland and peat bog, if the precise locality is closely examined, it will be found that the stems and leaves of cotton grass are strewn about the surface of the water, only the root below the ground level having been eaten. The throats of two Greenland Whitefronts shot near a small mountain lake in Wales on January 10th, 1953, were packed with these roots almost up to the base of the head.

I am indebted to Mr. Michael Leneghan, of Gwessalia, Co. Mayo, a local wildfowler who assisted me in tracing this food plant in Eire and also to Mr. E. Nelmes who has identified the plant specimens from Wales.

W. A. CADMAN.

[Mr. Cadman has kindly sent us some of the actual roots taken from the crops of the two Greenland White-fronted Geese shot in Wales on January 10th, 1953, as well as specimens of the discarded leaves collected at the same place on that day.—Eds.]

Pheasant swimming and taking off from water.—At No. 2 reservoir, Barrow Gurney, Somerset, on November 30th, 1952, we flushed a hen Pheasant (*Phasianus colchicus*) from a heap of snow on the bank. This bird rose to a height of approximately twenty feet and made to cross the reservoir, but having flown about half way it suddenly alighted on fairly choppy water and commenced to swim steadily towards the edge. It appeared in no way alarmed, and in fact it had swum at least thirty yards when, turning a little into the wind, it spread its wings to the fullest extent and, to our amazement, took flight again. It was last observed alighting on the bank, soon scurrying well out of sight.

P. J. CHADWICK AND BERNARD KING.

[There are a number of records of Pheasants swimming, but it seems unusual for such a land species as this to take off from water.—Eds.]

Unusual nesting-site of Red-legged Partridge.—As *The Handbook* states that the Red-legged Partridge (*Alectoris rufa*) builds “exceptionally on top of a stack,” I write to describe a nest at Lambourne End, Essex, during June, 1948. The nest was placed inside a four foot high pile of hay, alongside a stack. In one of the sloping sides of the pile, about one foot from the ground, was the entrance to a tunnel, approximately eight inches across. This tunnel ran straight into the hay for about nine inches, forked left, ran parallel to the outside, into a hollow, forked left again and came out. The tunnel, or burrow, therefore had two entrances which were two feet apart, so that the sitting

bird could not be seen from the outside, unless one put one's face to one of the entrances and enlarged it. The eight eggs had hatched by July 17th.

M. R. CHETTLEBURGH.

Begging behaviour of Black-headed Gull.—On April 15th, 1953, at a flash near Sandbach, Cheshire, I watched an immature Black-headed Gull (*Larus ridibundus*) persistently assume a typical begging attitude towards a Great Crested Grebe (*Podiceps cristatus*). When first noticed the grebe was diving for food with the gull following it on the water. Each time the grebe surfaced the gull moved towards it, stretching the head and neck low over the water and with upward jerks of the head accompanied by the shrill hunger call of a young bird, it begged food as from a parent.

When I revisited the flash on April 16th five Great Crested Grebes were present, each with an attendant Black-headed Gull. Four grebes were repeatedly harried by the gulls which flew above the water and swooped on them each time they surfaced. The fifth grebe was followed on the water by an immature gull which repeated the begging pattern outlined above.

On neither occasion was the immature gull successful in obtaining food from the grebe which ignored its attentions.

The predatory attacks of Black-headed Gulls on diving birds and particularly on Great Crested Grebes have already been described (*cf. antea*, vol. xxxviii, pp. 14-15), but the "begging" of food from other species does not appear to have been recorded and this note may serve to promote further observations.

A. W. GOODIN.

Guillemot incubating two eggs.—On July 3rd, 1952, while watching incubating Guillemots (*Uria aalge*) on Puffin Island, N. Wales, we noticed one which was sitting in an unusual, and apparently uncomfortable, position. Closer examination—it was possible by peering over the cliff top to watch the bird from a distance of 4 feet—revealed that it was attempting to incubate two eggs and finding difficulty in covering them.

Both eggs were of identical type (blotched turquoise), but one was paler than the other. No others of this type were within 10 feet. The thin ends of both eggs lay together and pointed in the normal direction, that is, towards the tail of the sitting bird. It was impossible for them to be incubated satisfactorily for as the bird sat almost half of each was clearly visible. The Guillemot also had great difficulty in stretching its legs wide enough apart to incubate in the normal manner.

Unfortunately we were unable to observe if, and when, each egg hatched. The following year, at the end of June, a single egg of identical type was being incubated in the same hollow.

The above facts strongly suggest that both eggs were laid by

the single bird, although it is impossible to be certain of this. We can find no previous record of a Guillemot incubating 2 eggs.

JAMES R. ENTWISTLE, MILES A. STANDISH AND KENNETH STANSFIELD.

Little Owl "smoke-bathing".—On December 26th, 1952, I observed a Little Owl (*Athene noctua*) "smoke-bathing" on a cottage chimney near East Wittering, Sussex. The bird was sitting on the rim of the chimney-pot, with wings fanned outwards over the path of the rising smoke. I can find no other record of a Little Owl "smoke-bathing" in this manner.

C. R. TUBBS.

[For observations on similar behaviour in certain other species, particularly Starlings (*Sturnus vulgaris*), see *antea*, vol. xl, p. 340 and vol. xli, pp. 83, 244.—EDS.]

Carrion Crow striking Lapwing in the air.—Together with Miss E. Sager, W. Verplanek and G. van Beusekom I observed on April 11th, 1953, how a Carrion Crow (*Corvus corone*) attacked a Lapwing (*Vanellus vanellus*) in the air and succeeded in bringing it down. At about 6.30 a.m. we saw, just south of Monks' House near Seahouses in Northumberland, a Lapwing flying out across the beach with three Carrion Crows in hot pursuit. One Crow swooped down on the Lapwing and gave it a vicious peck. The Lapwing, though a little shaky, flew on, but immediately the Crow dashed down again and pecked it a second time, this time holding on with the bill. After a confused struggle the Lapwing tore itself free again, but the Crow gave chase once more and delivered another peck. This made the Lapwing fall down onto the beach. The three Crows prepared to land near it, but in the meantime several Herring Gulls (*Larus argentatus*) had been attracted to the scene; we were also approaching, and this prevented them from alighting. When we reached the Lapwing it was in such a bad condition that we could pick it up. Both eyes were damaged, and there was a large wound under the wing. Blood dripped from the bill. We took the bird along to Monks' House, where Dr. E. A. R. Ennion kept it until it died the same day.

We are not aware of any similar record of this peregrine-like type of hunting by Carrion Crows. During a winter in the Angmagssalik district in East Greenland I often saw Ravens (*C. corax*) attack Ptarmigan (*Lagopus mutus*) in the same way, although I never saw them actually kill one. The local Eskimo however assured me that Ravens often kill Ptarmigan in flight.

N. TINBERGEN.

Curious behaviour of Carrion Crow.—On April 16th, 1952, towards dusk, I was watching the antics of 3 pairs of Carrion Crows (*Corvus corone*) among the branches of a tree on an Ayrshire farm.

One bird while being chased landed on a slim branch and its pursuer in trying to perch beside it knocked it over. Instead of letting go it remained hanging on to the branch upside down, tit-like, the pursuing bird meanwhile flying to another branch. I timed it for over a minute and I reckon it must have been hanging there for at least another minute before I started looking at my watch. It kept turning its head from side to side as if thoroughly enjoying the novelty of viewing the world from an unusual angle. In the end one of the other Crows, not the original pursuer, approaching closely, caused it to forsake its unorthodox perch and seek a normal one.

NEIL MCINTYRE.

[A comparable observation has already been published (*antea*, vol. xlii, p. 327).—EDS.]

Carrion Crow and Black-headed and Common Gulls "playing" with objects in flight.—With reference to the note by J. Denny (*antea*, vol. xliii, p. 333) on Hooded Crow (*Corvus cornix*) dropping and catching an object in flight, and to a similar observation by A. C. C. Hervey (*antea*, vol. xlv, p. 69) for the Herring Gull (*Larus argentatus*), some personal observations may be of interest.

On January 5th, 1952, in Richmond Park, Surrey, I noticed a Carrion Crow (*C. corone*) flying low over open ground carrying in its claws some object, several inches long, which appeared to be a stick or perhaps a bone. As I watched, the Crow dropped the object, alighted at once, then rose a few feet with the object in its bill. Then, flying slowly perhaps 10 to 15 feet above the ground, the Crow released it from its bill and immediately caught and held it in its feet for a short time before dropping it again to the ground. This time it alighted and rose again with the object in its bill before being lost to sight behind a rise in the ground. It should be noted that this form of play, as it appears to be, differed from that reported by Mr. Denny for the Hooded Crow in that the feet were used for catching. Although Carrion Crows are common in the neighbourhood, I have never noticed such behaviour before.

With regard to gulls playing with objects in flight in my experience this is not uncommon. I have several times seen both Black-headed Gulls (*L. ridibundus*) and Common Gulls (*L. canus*) playing with dead leaves high over the Serpentine and Round Pond in London, particularly in windy but mild winter weather. The usual practice is to carry the leaf to a good height in the bill, drop it, swoop after it and catch it, and repeat this process several times.

R. W. HAYMAN.

Red-eyed Vireo in Ireland.—On October 4th, 1951, a Red-eyed Vireo (*Vireo olivaceus*) was found dead at Tuskar Rock, off Co. Wexford, where it had evidently been killed by striking the

lighthouse. Many other migrants became casualties in the same night.

Identification was kindly confirmed by Mr. J. D. MacDonald at the British Museum (Nat. Hist.) and the occurrence was reported in *B.O.C. Bull.*, vol. 72, p. 37. Captain C. H. B. Grant also carefully examined the specimen and informed me that the plumage showed no trace of the bird's having been in captivity. A study of the weather charts shows how very suitable conditions were at the time for a west to east crossing of the North Atlantic. It is significant that during the week in which the Vireo occurred at Tuskar Rock an American Water Pipit (*Anthus spinoletta rubescens*) was observed at Great Saltee which is within sight of Tuskar Rock (*antea*, vol. xlv, pp. 325-328). Careful consideration of the facts points to the probability that the bird was a genuine vagrant.

ROBERT F. RUTTLEDGE.

[Mr. Roger Tory Peterson has very kindly agreed to prepare coloured illustrations of the Red-eyed Vireo and, in connection with the Lundy record (see pp. 364-367), the American Robin (*Turdus migratorius*) and these will be published when they are ready. A preliminary discussion of the occurrence of American land-birds in Europe is made on pages 367-368.—EDS.]

One Grey Wagtail killing another.—On September 30th, 1952, I witnessed the drowning of one Grey Wagtail (*Motacilla cinerea*) by another. I was on the towpath of the River Kennet near its junction with the Thames, when I noticed what appeared to be two wagtails fluttering on the water near the far bank. One was on top of the other and seemed to be pressing the second bird's head under the water with its beak. I tried to find something to throw to frighten the aggressor, but I could find nothing so had to watch helplessly. After a short while the topmost wagtail flew onto a punt near by and puffed out its yellow breast. Its victim gave one last flutter and then lay still. The drift of the water and the upstream wind gradually brought it towards my bank. It was quite dead when I lifted it out.

The murderer was a cock Grey Wagtail and its victim a young bird of the same species which had presumably trespassed into its territory. The two birds probably met in combat in the air and fell onto the water.

B. B. BASSETT.

Two pairs of Bullfinches nesting together in the same bush.—Mr. H. H. Lancaster, of Brackenhigg, Windermere, has sent me an account of two pairs of Bullfinches (*Pyrrhula pyrrhula*) occupying adjacent nests in the same bush. These nests were also seen by Miss Sheila McLaren who confirms the occurrence. As there is no similar record in *British Birds*, nor, as far as I can find, anywhere else, the following summary of his observations may be of interest.

At 6.30 a.m., on May 24th, 1953, Mr. Lancaster observed two pairs of Bullfinches in a small orchard. Both the females were feeding on the ground, and one was seen to enter a small gorse bush. The two males were very restless: one (male A, distinguishable by its rich dark breast) was continually trying to alight on the gorse bush which the female had entered, and was being driven off by the other male (male B, with a pale breast).

Later that morning male B was seen perched on the gorse bush. After a few minutes male A arrived and was again driven off by male B, who then worked his way into the gorse bush. Inspection of the bush revealed a nest with 6 eggs. It was not until the next day, after an unsuccessful search for the nest of the other pair in the bushes near by, that another inspection of the gorse bush revealed a second nest containing 3 eggs, almost touching the first nest and partly concealed by it. On the next day male B was several times seen perched on the gorse bush and working his way into it, while male A was seen perched about 30 yards away.

At 6 p.m. on June 4th, 5 young had hatched in the first nest (the sixth egg failed to hatch), and the second nest contained 5 eggs. On June 5th, at the same time, a watch was made on the nests, and male A was seen, for the first time, to enter the bush without interference from male B, who was also perched on the bush. On June 8th two young had hatched in the second nest, and on the 14th both nests contained 5 young. Both broods flew successfully, the first on June 17th and the second about 6 days later.

It was particularly noticed that there was no aggressiveness between the males on and after June 5th, when one family had hatched. Unfortunately, however, it was not certain which nest belonged to which male. It was also noticed that when the feeding of the young was in full swing, no two birds would enter the gorse bush at the same time. While one bird went to feed the young the others would wait at a little distance. On one occasion three were seen waiting in a plum tree a few yards away, while the fourth was at the nests.

D. W. SNOW.

Early breeding of Crossbill in East Anglia.—On January 14th, 1952, I examined an area in Suffolk for signs of breeding activity among Crossbills (*Loxia curvirostra*). At 2.15 p.m. I heard the chattering "sit-seecher, sit-seecher, sit-sit-seecher" characteristic of a fledgeling Crossbill awaiting food. From beneath a Scots pine, I saw the bird calling 6 ft. above me. The plumage in general was dull green, the grey-white breast was streaked with brown, the "cross" of the bill was barely noticeable and a tuft of down still adhered to the nape. In all respects this corresponded with juvenile plumage. There was no nest in the tree.

An adult male Crossbill approached this bird, and caused the chattering to rise in pitch and *tempo* until it resembled the twittering of a Swallow (*Hirundo rustica*). No food passed; the male flew to another tree, and the fledgeling soon followed, beating its wings strongly, but tending nevertheless to lose height. The short unforked tail could be seen clearly in flight. I remained near the spot for an hour, and saw another juvenile being fed by both adults.

On the morning of January 15th, Mr. L. R. Flaek and I found three juveniles being fed, and again had a good view of one in flight. In a tree near by L.R.F. located a new but used nest, in which the brood was probably raised.

On February 10th L.R.F. visited this site, and found a newly-dead fledgling beneath this tree. (Two boys with air-guns had been seen there earlier in the day). To judge by its size and development it was one of the original brood I had seen on January 14th. The fledgling was preserved in spirit, and sent by me to the Department of Zoology, Cambridge. Dr. R. A. Hinde kindly examined the specimen and confirmed it to be a bird of the year, with the following measurements: bill 15mm., tail 52mm., wing 88mm., tarsus 17mm. The mandibles were not crossed.

From previous experience I assumed that the juveniles first seen on January 14th were not less than four days out of the nest, and had probably spent 19-20 in it. Adding an incubation period of c.14 days and a laying period of at least 3 days, it is reasonable to assume that building was begun in the first week of December, 1951, if not before. *The Handbook* gives the breeding season as: "some laying January and February," and in "Additions and corrections": "Some lay December."

A. W. P. ROBERTSON.

House Sparrow enlarging its nesting-site.—In 1947, 1948 and 1949 I was able to maintain observations upon a House Sparrow (*Passer domesticus*) which apparently excavated its own nest-sites in an ornamental willow in a garden in Hove, Sussex. Each year the nest was situated in a cavity in the end of a vertical rotten branch some nine inches across; each winter the end of the branch broke away at the site of the previous year's nest; and each spring the cock enlarged a new cavity lower in the side of the branch apparently to provide a new nesting-chamber inside the shell of the bark, with an entrance at the side. The cock would start visiting the hole on fine days in January and February, sitting in it, chirping, and removing beakfuls of rotten wood from the floor of the hole; he was observed in the act of ejecting chips on a considerable number of mornings, and a small pile of chips appeared beneath the hole during March. By April he was able to withdraw within the cavity which had been formed, and a normal nest was then built within it, and two broods reared. The

process was observed over two springs, and probably occurred in a third; the activities of the cock can perhaps best be regarded as assisting the natural process of decay, but the bird undoubtedly enlarged the hole.

W. R. P. BOURNE.

Sexual behaviour occurring as overflow activity in juvenile House Sparrow.—On October 11th, 1952, fourteen House Sparrows (*Passer domesticus*) were feeding on the lawn of my garden. One juvenile cock (his black bib just beginning to show) was hopping about with a downy white feather in his beak. The bird approached a dandelion stalk, about five inches high and ending in a seed head but denuded of pappus and seed. Straddling the stalk, the bird moved along it towards the head and when the head was approximately between his legs he copulated against it, his wings drooped and tail depressed in the usual manner. At the end of the act, the bird shook himself and hopped away, the feather still in his beak.

This behaviour is interesting in that the dandelion head apparently presented sufficient stimulus for the release of copulation which thus occurred as an overflow activity, but it is surprising that the attempt was not directed towards one of the other sparrows (both sexes were present) which would have provided a more adequate stimulus-releasing situation

E. M. BARRAUD.

REVIEWS.

Birds of the Gauntlet. By H. von Michaëlis. (Hutchinson, London, 1952). 84s.

The author is a deservedly successful artist and writer, portraying in this book birds which he has known at close quarters. All, except a European Kestrel, are South African species: eagles, falcons, hawks, owls; also, despite the title of the book, geese, ducks, and a swan. Personally I prefer the drawings, which are liberally scattered through the book, to the coloured plates, of which there are eight. Particularly skilful is the soft, fluffy appearance which he gives to young birds in down. The text makes enjoyable reading, vivid and well-written. Much of it is devoted to the author's experiences in rearing, taming and hawking with birds of prey. He undoubtedly has a great flair for handling birds, nevertheless he says "I am conscious enough of all those little gravestones occasioned by my own failures. . . . The only reasonably safe way of seeing a bird grow up is achieved by leaving it in its nest under the expert care of its parents."

In the last chapter or two he discusses some of the basic effects on flying birds of wind (drift) and thermal currents, which as a pilot and glider pilot he appreciates better than most ornithologists, and on which he speaks with authority.

When he comes to navigation and homing, however, he seems on less sure ground, and claims that "we must accept as fact that some kind of force is sent out from their home-location, is transmitted through the air, and is received by the bird."

P.A.D.H.

Eyes in the Night. By Bengt Berg. (Reimer, Berlin, 1952). DM 11.50. English translation.

This book contains the story of an Eagle Owl reared and kept in Sweden for a year or more. As the following extract may imply, reminiscence and speculation are not altogether lacking :—

"A conscientious 'naturalist' would doubtless have described the young one better by saying that he was six and a quarter inches long and weighed so and so many ounces. We merely said that he was newly christened, after I had related the story about the Danish nightingale parson, a story well worth retelling."

Nevertheless as is to be expected when dealing with a species so little known in this country, the book contains some interesting observations. These are based on many hours watching, by day and night, both of the nest and of the tame youngster; the latter was seldom caged and was encouraged from the start to hunt for itself. There are 57 photographs; two-thirds of these are of Eagle Owls and include wild birds perched away from the nest and in flight. P.A.D.H.

The Origin and History of the British Fauna. By B. P. Beirne. (Methuen, London, 1952).

This is an attempt to explain the various types of distribution exhibited by British animals on the basis of a number of hypotheses which the author considers as probable, though he admits that definite proof of most of them is not obtainable.

He dates the final separation of Britain from the Continent, and of Ireland from Britain, about 6,000 years ago and considers that this is too short a period for the development of distinct races except in very occasional circumstances. As very many British insects and a number of mammals and birds are distinguishable from the Continental forms he is therefore forced to suppose that the British races had mostly already developed before the formation of the English Channel and the Irish Sea.

It is impossible in a brief review to go into the details of the various glacial and interglacial periods, but except in the case of boreal species, of which the only representative among birds is the British Ptarmigan, it is difficult to believe that the majority of the races peculiar to Britain could have survived there when most of the land was covered by an ice-sheet. However at the height of glaciation so much water was locked up that the sea-level is supposed to have been lowered at least 300 feet, and this would mean that large areas of land now under the sea were exposed. The area along the west coasts of Scotland and Ireland Dr. Beirne calls the Celtic Land and on it he supposes that various races peculiar to Ireland, the Hebrides or the northern Scottish islands were developed, examples among birds being the Irish Red Grouse, Coal Tit and Jay, the Hebridean Rock Pipit, Song Thrush, Stonechat and Hedge Sparrow, the Shetland Starling and the Shetland, St. Kilda and Hebridean Wrens.

Most of the other British races, including all the examples among birds, he supposes were developed in the Channel Land, which comprised England south of the Thames and the area now covered by the English Channel. In support of this view he points out that the forms of the Blue Tit, Long-tailed Tit, Dartford Warbler and Robin found in the Channel Isles and Brittany are almost or quite identical with the British races.

The reviewer must confess that he does not find Dr. Beirne's arguments convincing, and that it seems to him simpler to suppose that evolution has progressed more rapidly than the author thinks possible and has tended to develop races better adapted to the damper and more equable climate as one proceeds from the Continent westwards to Brittany and Great Britain and from Britain to Ireland and the Hebrides. But it is always stimulating to have facts presented from a new angle and on this account the present book may be welcomed. It should be added that it contains 60 maps, most of which illustrate the ranges of individual species in the British Isles. W.B.A.

LETTER.

THE USE OF DATA ON NEST RECORD CARDS.

To the Editors of BRITISH BIRDS.

SIRS,—I should like to make some comments on Drs. Gibb and Campbell's and Mr. Butterfield's answers (*antea*, p. 119) to my letter about nest record card data.

I did not imagine, of course, that the organisers of the scheme would be unaware of the difficulties of possible biases in the data on nest record cards; the question is rather whether, in the absence of any knowledge of the size of such biases, the assignment of a standard error to a mean is meaningful. It is true that such a standard error gives a measure of chance distortion, but, in my opinion, this is hardly worth having, if, at the same time, the same mean is subject to a systematic bias of the same order as the chance effect, which the standard error cannot allow for.

I cannot accept entirely Mr. Butterfield's conclusions concerning a possible decline in nest-finding as the season advances. First, there is no *a priori* reason for supposing the distribution of nesting times to be normal, and secondly, since two superimposed normal distributions have five adjustable parameters, it is hardly an exaggeration to say that they will fit reasonably well almost any sample of observations.

On the question of measurement of possible bias, it seems to me that the difficulties in the way of such an investigation are not quite so formidable as Drs. Gibb and Campbell seem to believe. Three major sources of bias suggest themselves :—

- (a) That due to interference by the recorder,
- (b) That due to unrepresentative spatial distribution of nests,
- (c) That due to unrepresentative temporal distribution of nests.

The investigation of (a) might take the following form: choose a common species, such as Blackbird, and divide all nests found into pairs. To a random member of each pair, make daily, or frequent visits; to the other nest of the pair, make the minimum number of visits necessary to ensure that the nesting success is known.

Biases under heading (b) would be revealed if the results of *all* the nests in a given area were different from the usual sample of nest record cards from a similar area. It is not beyond the scope of the amateur to track down all the Blackbirds' nests in, say, 200 acres, and, if possible, different habitats should be chosen and compared. A similar survey would show whether any decline in nest finding takes place as the season advances.

No one is likely to deny the value of the information that nest record cards can give on breeding biology. The question is whether or not the scheme has advanced sufficiently far for it to be worthwhile refining the techniques used in amassing and analysing data from it. Every source of bias which is shown to be negligible immensely increases the value of the data, and those that are found important are likely to shed light on the problems of breeding biology being investigated.

J. A. NELDER.



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BRITISH BIRDS

NUMBER 11, VOL. XLVI, NOVEMBER, 1953.

AN OBSERVATIONAL STUDY OF THE GULLS OF SOUTHAMPTON WATER.

BY

JOHN H. CROOK.

INTRODUCTION.

THE work described in this short paper was carried out in the winters of 1950/51 and 1951/52 mostly in the Southampton area. I am most grateful to my friends from the New Forest Ornithologists' Club, Gordon Wooldridge, Alan Moody, Barry Goater, and Keith Edwards, all of whom gave invaluable assistance; and I am also indebted to my correspondents, A. J. Bull, Dr. B. Campbell, K. G. Speneer, Miss I. Werth and R. Whitlock. Dr. David Laek has been most kind in giving advice during the preparation of this account.

Studies of bird populations in winter often reveal a system of flocking, feeding and roosting that seems best suited to the needs of the species. In Southampton Water the winter population of gulls (*Larus* spp.) is organised into such a system. The birds roost at defined localities, spreading out along well canalised routes during the day, feeding, and returning in large flocks in the evening. I propose to call this a "dispersal system." The population of the roost may be divided into two, those birds that fly inland every day and those that remain in the estuary. The following species roost in Southampton Water, Black-headed Gull (*Larus ridibundus*), Common Gull (*L. canus*), Herring Gull (*L. argentatus*) and Great Black-backed Gull (*L. marinus*).

In the morning the birds start moving away from the roosts as soon as there is an appreciable lightening of the sky. Counts on evening flights and qualitative observations show that although all species will fly inland the Great Black-backed Gull does so the least. Common and Black-headed Gulls are the most numerous inland and also occur in large numbers in the estuary. The Herring Gull is mainly "estuarine." The proportions of the species are noticeably different at the mouth of Southampton Water where there are usually fewer Black-headed Gulls and relatively many more Herring and Great Black-backed Gulls. In winter migrants increase the number of birds in the valley substantially and this influences the proportions of the species present. Fig. 1 shows the position of the roosts and the routes in the evening.

(c) As above, but also including waste, etc., stirred up from the bottom by the wash of ships.

(3) High concentrations of the prawn *Palaemonetes varians* in salt pans on reclaimed land at Dibden.

(4) *Non-estuarine*.

(a) Agricultural land—especially behind the plough.

(b) Flooded land.

(c) Flying insects—e.g. ants.

(d) Waste—rubbish dumps—sewage farms, etc.

In other estuaries there are probably further feeding-habitats corresponding with local topography. The above classification is based upon the differing modes of exploitation.

The feeding-activities related to these habitats are as follows:

(1) *Tide-line feeding*. [Littoral (a).]

The birds follow the receding tide, maintaining a minimum individual distance of about a wing span. Infringement of individual distance results in loud calling and threat posturing. Fights are rare. The food is evenly dispersed and so are the birds. Puddling with the feet may be used to disturb the prey from the mud.

(2) *Scavenging*. [Littoral (d). Open water (b). 4 (d).]

The localised nature of the food seems responsible for the "all in" struggle that occurs in such places. The birds engage in a "free for all" in which the most active bird obtains the most food. There is no individual distance.

(3) *Picking about*.

The birds walk about on the shore picking up food-particles occasionally. The birds appear to be in no need of food and the activity often occurs after intensive feeding such as "tide-line feeding." It may occur on the fringe of high water roosts on mud.

(4) *Idling*.

Similar to "picking about" in that it occurs often after intensive feeding or on dispersal from an exhausted supply. It appears to be exploratory. If an "idling" bird discovers a localised source of food its descent is at once observed by others and aggregation at the site follows almost immediately.

(5) *Puddle feeding*. [Littoral (b).]

The birds are evenly dispersed swimming actively with the head and neck inclined in a "searching attitude." The prey is obtained by a quick dipping of the bill under the water. The bird may

paddle its feet rapidly in one spot so disturbing the mud and the organisms within it. This activity can occur on both a rising and a falling tide. Individual distance is maintained as in "tide-line feeding."

(6) *Individual plunge*. [Littoral (c).]

The birds swim slowly around, usually in a small area and adopt the "searching attitude." The prey is obtained by a jump into the air, one or two balancing wing-beats and a plunge after the food.

(7) *Plunge-flight feeding* [Open water (a).]

A compact flock of fifty birds or so hovers over a small area of water. As soon as the prey is located the nearest bird dives down and takes it. Only occasionally do two birds go after the same food particle. Even distribution over the feeding-area is maintained by an individual distance of several feet, or much more, depending on the concentration and frequency of the food. N.B. "Scavenging" over open water differs from this in that the food is localized and a "free for all" is the result.

(8) *Liner following*. [Open water (c).]

The gulls (also many or even mostly Herring Gulls) will follow the liners in and out of Southampton Water. The number of birds involved seems to depend upon the strength of the up-currents created by the ship and also upon the direction of the wind. The actual taking of food is by the "scavenging" method.

(9) *Scoop feeding*.

This activity enables the Black-headed Gulls to feed upon the dense shoals of the prawn *Palaemonetes varians* which occur in the 2-4 inch deep salt pans of Dibden Bay. The birds run or swim rapidly through the water with the beak and throat and much of the head submerged. The concentration of the prawns in these pools is very great indeed and when the birds feed they maintain a minimal individual distance of an inch or two and feed in a closed pack. There is no squabbling, but there is a continuous excited chatter from the flock. The birds run in nearly parallel lines and rarely obstruct one another while they feed. (See Barnes, 1949.)

Individual distance during feeding is determined apparently by the concentration of food, the density of feeding birds on the ground and the intensity of the feeding activity. There is an interaction between these factors, but clearly much more observational study is required to elucidate the detailed behaviour of feeding flocks.

The "dispersal system" breaks up in April when the roost in Dibden Bay becomes very small and finally deserted. The site is in use again by the end of July and the numbers increase throughout the autumn.

Bull informs me that a few Black-headed Gulls continue to fly inland from Poole Harbour during the summer months. These are possibly non-breeding birds.

At the roosting sites the birds alight on mud or water depending on the state of the tide and usually preen or wash before resting. Most observations on their behaviour have been made from Dibden Bay where a consistent pattern of events can be observed during the winter.

The arriving birds are at first widely dispersed around the shores of the bay and on the water, but they are nearly always more densely packed over the definitive roosting site. As the light fails the most outlying birds begin to fly over the heads of the others in small groups and to concentrate nearer the centre of the roost. This continues, reducing the area covered by the birds very considerably, until the failing light makes further observation impossible. I have called this gradual concentration "shuffle flighting" which is descriptive of the appearance of the movement.

Water-movements influence the distribution of the birds to some extent, but the creek is essentially a backwater and drifting is not extensive. At low water the birds sit or stand on the muddy shingle. There is some division amongst the birds since the Great Black-backed Gulls occupy a long, raised ridge of shingle while the mass of Black-headed and Common Gulls stand on the flats around them. Great Black-backed Gulls have been observed chasing the other gulls piratically and their presence in the roost is not conducive to social stability. Herring Gulls may stand with both groups of birds. At high tide the species are mixed together more evenly as a result of water movements.

The roost receives both "up-river" and "estuarine" birds, but the two groups tend to remain separate until late in the afternoon. This is due, very largely to the activities adopted by the "estuarine" birds.

If the tide is falling in the late afternoon the latter feed along the tide line. The "up-river" birds meanwhile are streaming down river and alighting at the roost. Very little attraction has been observed between the two groups and it is not until much later that the "estuarine" birds join the others. Observations indicate that feeding stops with nightfall, but this is not certain.

If the afternoon tide is high the majority of the "estuarine" birds are gathered into high water roosts. The largest is situated on some reclaimed land a little upstream from the night roost in Dibden Bay. The birds collect here in one or more groups of

up to a thousand individuals. The "up-river" birds on their way downstream pass very close to this site, and very often portions of the flocks have been observed to fly down and join the birds on the ground. The majority of the birds however continue downstream and settle at the night roost. With weakening light the high water roosts become increasingly restless and in small or large groups all the gulls eventually fly down and join the main body.

In spring and early autumn when the number of birds is low the behaviour at the roost becomes variable and the site of the roost less certain. During a falling tide in April the small number of "up-river" birds at the roost were observed to move away in groups until all of them had joined the numerically superior mass of "estuarine" birds feeding along the tide line. They were not observed to feed with them however, and the roost site that evening was probably well out in the bay near the low tide line.

One August evening during high tide the "up-river" birds flying downstream alighted at the high water roosting sites and only a small number of birds flew on to join the minority in the night roost. Eventually all the birds in the latter flew upstream and settled into the high water roost which thus became the functional night roost.

Spring and early autumn are the times of break-up and reconstitution of the "dispersal system" and the site of the roost is least certain at these times. The nightly use of this roosting site seems to depend on the size of flocks using it, the intensity of flock integration and the amount of attraction exerted on the birds by other flocks in the neighbourhood.

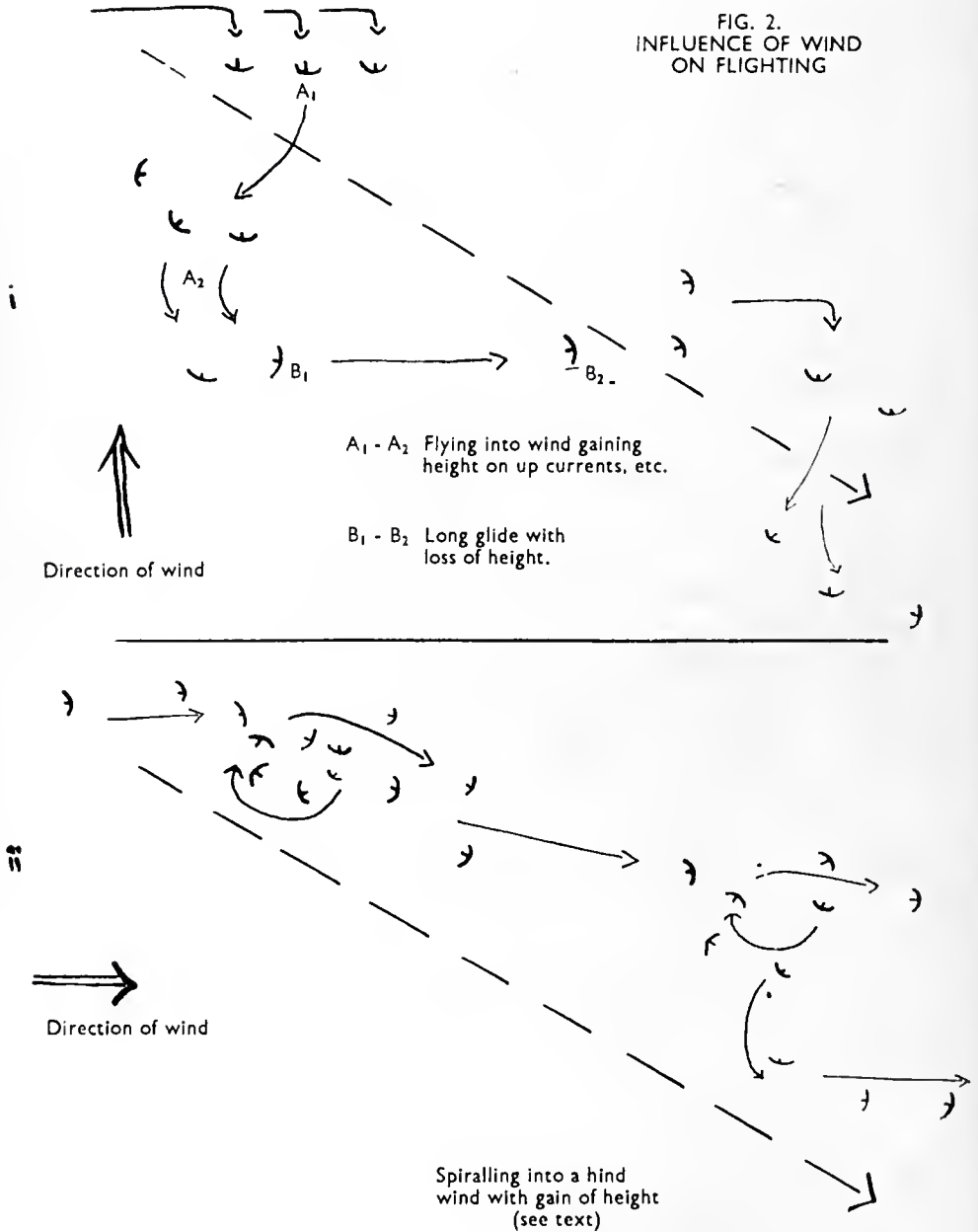
FLIGHTING AND DISPERSAL.

The behaviour of the flocks coming down the Rivers Itchen and Test was watched from Cobden Bridge, Totton Causeway and from various positions in Southampton. The birds travel in compact flocks and early in the year it is possible to see that these are usually monospecific. Black-headed Gulls and Common Gulls flock together frequently, but Herring and Great Black-backed Gulls are rarely associated with another species. In the middle of winter, however, the number of birds passing is so great that the sky seems full of a continuous stream. Great care is needed in identifying flocks in poor light and reliance is often placed on flight behaviour, which is usually distinctive.

Wind and weather influence the flighting to a considerable degree, in heavy rain or squally weather the birds fly low over the houses in Southampton, on calm evenings they fly steadily at much greater heights and usually in V-formations (see also Bryanston School N.H.S. Report, 1950). Flight integration within the flocks seems to be at a high level and in direct contrast with

the straggly hosts of Rooks (*Corvus frugilegus*) which pass up-stream at the same time. In a strong wind the V-formations are no longer maintained and the birds make great use of the wind for gaining height and gliding.

When the wind is directly opposed to the line of flight the gulls fly steadily into it making use of up currents over houses and ships to gain height. They then enter a glide, in which they slowly lose height before returning to steady flight again.



When the wind is at an angle to the line of flight the sequence is as follows:

- (1) Long glide at an angle inclined to the direction of the wind.
- (2) Turn into the wind.
- (3) Rising, with a few wing beats, into the wind and gaining height.
- (4) Turn out of the wind and enter long glide.

The resultant is a straight line to the roost or down the river valley. The birds steer in this way and maintain a definite line of advance. The greater the angle between the glide line and the direction of the wind the more the bird has to turn in order to gain height. When the wind is blowing from behind the bird has to turn through an angle of approximately 180 degrees in order to face the wind. It may then continue, completing the circle or entering a spiral before returning to the long glide again. I have often watched a flock enter a spiral and become trapped in it, apparently as the result of flock integration. The flock then drifts with the wind rising higher all the time. Eventually the birds glide out of the spiral and return to the original line of flight. These flight patterns are illustrated in Fig 2.

The flocks inland usually fly in well canalised routes along the river valleys. This is not always so however, for Whitlock (personal communication) informs me that near Salisbury, evening and morning flights cut across hills regardless of contour.

Inland feeding.

Whitlock remarks that these "inland" gulls feed wherever there is food to be had, newly ploughed fields, pig pens and so on. Bull (personal communication) writes from Bryanston: "There is undoubtedly a tendency for the Black-headed Gull to follow the plough or to feed on ploughed land where the soil is being disturbed, but the Common Gull on the whole prefers grassland . . . in times of flood the numbers of birds feeding on waterlogged land in the valleys is much increased." Campbell (personal communication) records particularly the importance of flooded land near Oxford where Black-headed and Common Gulls feed almost entirely upon limp or lifeless lumbricids taken from the water or around the edges of the flood pools. The Southampton Sewage Farm and Council Tip are major scavenging grounds and the use of such resorts seems usual over most of the country. Spencer writing from Lancashire informs me that while Black-headed Gulls spend much time on ploughed land the "larger gulls" are the more frequent at offal tips near the towns.

These observations reflect Spärck's findings (1950), based on stomach analyses, that Common and Black-headed Gulls are

mainly insectivorous, while the main constituent in the diet of the Herring Gull is offal. In the upper estuary of Southampton Water a great many Black-headed and Common Gulls feed on the mudflats. The diet of these birds must differ considerably from those which feed inland. It is not known how much interchange occurs from day to day between the "inland" and "estuarine" feeding flocks.

Bull (personal communication) has observed in Dorset that in times of frost the movement inland is reduced to a trickle. This was noted on one extremely snowy day at Southampton.

The "dispersal system" on the Itchen and the Test has no known inland roosting sites such as Spencer (personal communication) has observed on the reservoirs of the River Ribble valley. Inland roosts appear to be secondary roosting sites and liable to be abandoned in severe weather. The "estuarine" roosts are the primary and most constant roosting sites. The whole "dispersal system" appears to be based upon these in nearly every case.

Behaviour in the upper estuary.

Usually the greatest numbers of Black-headed Gulls and Common Gulls pass Totton Causeway half an hour or so before sunset, but the evening flight begins a little earlier on dull days. Usually the main peak of Herring Gulls is later, the greatest numbers passing immediately after sunset on a clear day. Werth (personal communication) also remarks that the arrival times of birds at Eecup Reservoir depend largely upon the light intensity—earlier in the poorer light.

When the flocks arrive over the estuary there is a rapid change in their behaviour. This occurs where the Rivers Test and Itchen broaden quite suddenly into navigable waters at the Totton Causeway and Cobden Bridge respectively. The flight behaviour alters as the birds approach, the steady wing beats (in calm weather—see above) giving place to a long glide down on to the water. The method of descent is of necessity more precipitous in a high wind and is characteristic for each species. The flocks thus aggregate in the upper estuary of both rivers. There may be one large aggregation or a number of smaller groups. The presence of these on the water seems to act as an attraction to later flocks, most of which descend to join them. Later in the evening when the number of birds has been greatly reduced there is an increasing tendency for the flying birds to continue downsteam. These may even act as an attraction to the sitting birds.

Late in the evening there are usually no birds below the bridges and new arrivals fly straight on down the estuary. The birds alight on water or mud depending on the state of the tide and washing or preening usually follows alighting. Below Cobden Bridge there are usually large numbers of gulls that have re-

mained in the estuary all day. It is often possible to distinguish the "inland" birds from the "estuarine" birds since the former tend to remain in separate groups, either washing or preening while the latter are usually "idling" or engaged in one of the several feeding activities. Later as the "estuarine" birds move towards the roost this distinction becomes less apparent.

With decreasing light the aggregations break up progressively. At first small parties detach themselves from the main group and fly downstream. The passing of a train, plane or small boat may scare a large number of birds and after wheeling around many of these fly down stream also. As the light weakens the excitability of the group increases and sudden spontaneous departures will occur, without extrinsic causes being apparent. In addition there is usually a continuous "dribble" of individuals and small groups from the edges of the main aggregations. Local excitation whether intrinsic or extrinsic, flock integration and an increasing excitability probably related to the failing light seem to be the main factors determining the size of departing flocks. At the head of the estuary there is thus a reshuffling of birds into different flocks from those that fed on feeding sites inland. Flock continuity from day to day would appear very unlikely.

SUMMARY.

An outline study has been made of the "dispersal system" of the gulls in Southampton Water. "Estuarine" Black-headed Gulls have nine different feeding activities which are related to the types of feeding habitat available in this estuary. A cycle of activity may be constructed by correlating feeding behaviour with tidal and diurnal periodicity.

The population of the Itchen, Test and Hamble valleys roosts with the "estuarine" birds at three main sites in Southampton Water. There is a dispersal every morning and an evening concentration. The roosts are in constant use throughout the winter, but in spring and autumn when the numbers are low the activities are less constant and the roost sites variable.

The flocks flying to or from the roosts are shown to steer in high winds in such a way as to maintain a straight line advance. Deflection from the usual routes is unusual at Southampton. The behaviour of the flighting birds changes as soon as the estuary is reached. Flock continuity from day to day is considered unlikely.

The "system" is broken up in the summer for the breeding season.

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STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

LII. HAWK OWL AND URAL OWL.

Photographed by ARNE BLOMGREN, SVANTE LUNGGREN AND

B. ÖHRN.

(Plates 60-67).

THE Hawk Owl (*Surnia ulula*) is a distinctive bird gaining its name from the hawk-like appearance of its relatively small flat-topped head (see plate 62), rather short and pointed wings and long tail. In flight it somewhat resembles a Kestrel (*Falco tinnunculus*), and it will even hover. The face pattern, whitish with heavy black border, is well seen in plates 61 and 62, and is evident also in the young bird on plate 63 (upper). Plate 60 shows the distinctive barring of the under-parts, and illustrates the bird's habit of perching clearly visible in exposed situations.

Ready identification is aided by its indifference to man, which often allows close approach; and it hunts as much by day as by night. The species breeds in central and northern Scandinavia and Finland, north to the tree limit, also across north Russia and Siberia and in N. America. In autumn a proportion of the birds regularly leave their breeding quarters, and it is of annual occurrence south almost to Germany. Like most of the European migrants or partial migrants, a few have reached Britain, but it has been very rarely recorded during the present century. A very few examples of the N. American race have also occurred here.

The Ural Owl (*Strix uralensis*), a sedentary bird, is not suspected of having reached Britain, although it breeds across central Europe west almost to Oslo. In the north it reaches the arctic circle in E. Sweden and Finland. In the southern part of its range it is confined to mountain forests, south to the Carpathians, with an isolated outpost in S.E. Germany and Austria. Eastwards it extends to Japan. It has a face pattern and rounded head similar to the Tawny Owl (*S. aluco*) but the Ural is appreciably larger and paler, with long dark streaks showing well on the underparts in plate 66, and it lacks the Tawny's clear row of large whitish spots on the shoulder. Another feature, very distinct in plate 66, is the unusual length of the tail. The long tail is also normally noticeable in flight, but this is not very apparent in plates 64 (upper) and 64 (lower) where the tail is widely fanned on take-off. The plates however show well the broad, rather long wings, and their patterning. The eyes of this owl are rather small, and blackish in both adults and young (see plates 67 and 63 (lower), whereas most other owls, except the Tawny and Barn (*Tyto alba*), have yellow or orange eyes.

Plates 67 and 65 (or 64, upper) show typical situations for a

nest in the broken-off trunk of a conifer. Such sites occur commonly in virgin forest in N. Europe, the trunks of old trees often breaking about 12 to 15 feet above the ground. British ornithologists fortunate enough to see this bird are most likely to encounter it in Sweden or Finland, but even in the remoter parts of those countries the farming of the timber is generally all too thorough for even the smallest hole-nesting species, and scarcity of sites must severely limit the numbers of this Owl. It is not so strictly nocturnal as the Tawny Owl. P.A.D.H.

THE SONG OF THE WOODPIGEON.

BY

JULIAN S. HUXLEY AND P. E. BROWN.

DURING 1948, one of us (J.S.H.), after listening carefully to the singing of the Woodpigeon (*Columba palumbus*) and the recording of a number of its songs, came to the conclusion that the song of this species differed from the generally accepted version, and, in 1949, he sent a note on the matter to *British Birds*. However, before this could be published, he happened to learn that the second author (P.E.B.) had independently reached the same conclusion and was engaged in an effort to obtain a large enough series of observations to make it possible to draw certain quantitative conclusions. We therefore decided to pool our observations, and this joint note is the result.

A total of nearly 4,800 songs was recorded, 4,449 by P.E.B. in north Hampshire, 133 by Dr. Bruce Campbell at Hordley, Oxon, and the remainder by J.S.H. near Azay-le-Rideau in Touraine, France, and at Hampstead, London. We wish to thank Dr. Campbell for putting his records at our disposal. Only the large sample recorded by P.E.B. has been quantitatively analysed. Bruce Campbell's data, apart from two obviously aberrant songs from individual birds, completely support the conclusions derived from P.E.B.'s data. J.S.H. did not note all the details recorded by P.E.B., but his data and impressions are in full general agreement, except that in his birds, the type beginning on A (see later) seemed not to be quite so exceptional as in P.E.B.'s.

The popular verbalization of the Woodpigeon's song is *Tak' two coos, Taffy*, thrice repeated, with a single additional *tak'* at the close. This is also, in general, the view of *The Handbook* (Witherby et al., 1941, vol. iv, p. 131) which states that it consists of "a phrase usually of five notes 'coo-cooo-coo, coo-coo'

repeated two or more often three times. . . Commonly the sequence of phrases ends with an abrupt single 'coo' like beginning of a new phrase suddenly broken off."

To facilitate discussion, we propose to use letters to designate the five different notes upon which the song is constructed, thus:

Tak'	two	coos,	Taffy	
Coo-	cooo-	coo,	coo-	coo
A	B	C	D	E

Using this terminology, the "accepted" version is that one song normally begins on A and after (usually) three repeats, ends either on A (the so-called beginning of a new phrase), or less frequently on E. What we have found, however, is that the song normally begins on B and ends on A. The basic phrase of the song is therefore B-C-D-E-A, not A-B-C-D-E— "Two coos, Taffy tak'" instead of "Tak' two coos, Taffy"—so that in ending on A the bird is merely completing a normal phrase, not giving the isolated start of a new one. This version of the song comes out tolerably clearly in Koch's records (Nicholson and Koch, 1936). It should be stated that both of us were so conditioned to the usual version that we were for a time unwilling to believe that it normally starts on note B. In any case, the listener must be very much on the alert to be sure that he really does catch the first notes of the song, and is not merely assuming what he believes to be normal. All songs about which there was the least doubt were, of course, excluded. It is important, therefore, to emphasize that care was taken only to record those birds which sang in reasonably close proximity to the listener, as otherwise it would have been possible to miss a note, especially that at the beginning of the song. This is especially true of the note beginning the song, partly because it is the beginning, but partly because, when it is A, it is often given in a half-hearted and rather inaudible way. This does not apply to B as a first note, and is a further indication that to begin with A is somehow "abnormal." Even when the first A is faint, the difference between songs beginning with A and with B is clear if conditions of audibility are really good. The half-hearted nature of beginning A's struck J.S.H. more forcibly than it did P.E.B. Possibly some of the difference was due to individual variation. But J.S.H. is inclined to believe that a further percentage, perhaps up to 5 per cent, of birds classified by P.E.B. as beginning with B, in reality begin with what J.S.H. calls "suppressed A." In any further investigation, A-beginners should be classified under the two heads of "full A" and "suppressed A." These should be recorded as A and (A) respectively in the notation.

Before proceeding to our analysis, some further details from published descriptions of the song should be noted. *The Handbook*

adds to what we have quoted "Third and last notes may be double, 'coo-cooo-cooroo, coo-cooroo,' or last only, and other variants occur": we also have noted the occasional doubling of one or two notes by individual birds. It also mentions the usual note in display, "a long-drawn "crrroo-coo-roo" delivered with great intensity; also a muffled single coo, which may be quickly repeated." Both of these we confirm; they cannot be confused with a normal song.

Dr. Ernst Mayr drew our attention to the study by Voigt (1920). On p. 210, he syllabizes the song with the first note of the first phrase (our A) put in brackets, because, as he says, it is "frequently omitted." He then states that, whether the first note is omitted or not, the entire song ends with a raised (gehobenen) note. He also states that each phrase may sometimes have six instead of five syllables (i.e. with one double note), and that the greatest number of irregularities occur in late summer and early autumn (we presume up to the end of the song-period); that at all seasons, many individual versions are to be heard; that song-frequency is at its highest pitch early in the morning in spring; and that there is a general diurnal rhythm with only occasional songs during the middle of the day, but with an increase again towards evening.

Nicholson and Koch (1936, p. 167) give only the erroneous "accepted" version of the song, in spite of the fact that, as already mentioned, the true normal song can be heard on Koch's records. They add: "often a series begins and ends with a detached single 'coo'": the detached "coo" at the end is normal, but we have never heard one at the beginning. Noll (1942, vol. 2, p. 126) gives the "accepted" version, including the extra note at the end of the third phase. So does Morris (1925, p. 118), though he says that there may be an extra 2 or 3 phrases in a complete song, and describes the final "extra" note as different from the first "coo" (our A)—"a short 'kuk,' like a clearing of the throat, or as though disturbed when starting upon another repetition." Newton (1896) in his famous *Dictionary of Birds* does not even mention the Woodpigeon's song!

The only correct description we have been able to find is that of Heinroth and Heinroth (1927, vol. 2, p. 46). They write simply that the best-known call of the Woodpigeon is the "Ruguh-gugu, Rugugúh-gugu, Rugugúh-gugu Rugugúh-gugu, Rú," in which the final "Rú" represents the delayed delivery of the missing syllable of the first phrase. (Note that they accent it specially; in a similar way, Voigt speaks of it as "raised." However, it is in reality no different from the normal A-note; it merely seems more emphatic because of its detachment from the subconsciously anticipated remainder of the phrase.) The fact that this observa-

tion has apparently not been taken into account by later ornithologists is perhaps due to the confusing notation used. It is curious that the Heinroths describe only a 4-phrase song. As we shall see, 4-phrase songs do occur, but they are less common than 2-phrase, and far less so than 3-phrase songs.

We may now proceed to a quantitative analysis of P.E.B.'s sample of 4,449 songs. The most striking single fact is that 4,322 of them (c. 97 per cent) started on B, and only 137 (c. 3 per cent) on A or (more rarely still) on some other note. Thus the phrasing which almost all previous authors describe as non-existent or abnormal is in fact far and away the most usual. That this error could have been perpetuated for so long is really astonishing and emphasizes the fact that, by comparison with vision, human hearing is a singularly uncritical faculty.

Songs may further be classified according to the number of phrases in each. When this is done for the 4,205 most common variants, i.e. those beginning with B and ending with A or E (c. 94 per cent of all songs recorded) we obtain the following results:

TABLE I: FREQUENCY OF PHRASES IN SONGS BEGINNING WITH B

No. of phrases in song	Total number of songs ending					% of songs of different phrase numbers ending		
	in A or E	in A	%	in E	%	in A or E	in A	in E
1	133	122	91.5	11	8.5	3	4	2
2	1064	961	90.3	103	9.7	25	29	11
3	2405	1907	79.3	498	21.7	57	58	55
4	561	297	52.7	264	47.3	13	9	29
5	36	16	40.5	20	59.5	1	½	3
6	6	1		5				
TOTAL	4205	3304		901		100.0	78.6	21.4

Note.—Fractions having been ignored, percentage columns do not always add up exactly to 100.

It will be readily seen that the 3-phrase song is much the commonest, with the 2-phrase song by no means uncommon, averaging about one in four, whilst the 4-phrase song occurs, on an average, about one in every eight.

It is noticeable that songs ending in E (i.e. those with the last phrase incomplete) are relatively much rarer than those ending in A in the 1- and 2-phrase songs, but become increasingly more abundant in those with more phrases, until they are absolutely more frequent in the 5- and 6-phrase songs. This would seem to indicate that the bird gets "tired" as its song grows longer, so that there is a tendency for the song to stop before the phrase is properly completed.

P.E.B. timed a number of songs with a stop-watch, and the



HAWK OWL (*Surnia ulula*).

SWEDEN. (Photographed by SVANTE LUNDGREN).

The distinctive barring of the under-parts can clearly be seen here. The habit of perching in an exposed place is typical of the species. (see page 398)



HAWK OWL (*Surnia ulula*).

SWEDEN. (*Photographed by SVANTE LUNDGREN*).

The heavy black border to the whitish face is noticeable in this photograph.
The perch is again an exposed one.



HAWK OWL (*Surnia ulula*).

SWEDEN. (Photographed by SVANTE LUNDGREN).

This plate shows best the somewhat hawk-like appearance of the bird, and its relatively small flat-topped head. The distinctive, black-bordered face-pattern also shows up well.



UPPER: YOUNG HAWK OWL (*Surnia ulia*)
SWEDEN. (Photographed by ARNE BLOMGREN.)
LOWER: YOUNG URAL OWL (*Strix uralensis*)
SWEDEN. (Photographed by ARNE BLOMGREN.)



URAL OWL (*Strix uralensis*).

SWEDEN. (Photographed by ARNE BLOMGREN).

The long tail of this species is normally conspicuous in flight, but it is not very noticeable in either of these photographs where it is widely fanned.
(see page 398)



URAL OWL (*Strix uralensis*).

SWEDEN. (Photographed by ARNE BLOMGREN).

The heavy streaking on the under-parts can clearly be seen here. The broken off trunk of a conifer is a typical nesting-site for this species.



URAL OWL (*Strix uralensis*).

SWEDEN. (Photographed by B. ÖHRN).

The tail of this species is unusually long in comparison with those of most other owls. Otherwise the shape is not unlike that of the Tawny Owl (*S. aluco*) which is, however, smaller and darker.



URAL OWL (*Strix uralensis*).

SWEDEN. (Photographed by SVANTE LUNDGREN).

The face-pattern and the position of the small, blackish eyes are clearly shown here.

following tables summarize the results in the two commonest types of song:

TABLE 2: DURATION OF SONGS BEGINNING ON B AND ENDING ON A.
(i.e., consisting of a whole number of phrases).

No. of phrases in song	No. of songs timed	Average duration of song (in seconds)	Average duration of phrase (in seconds)
1	16	2.55	2.55
2	214	5.37	2.69
3	343	7.97	2.65
4	32	11.64	2.91
5	3	15.50	3.10

TOTAL 608

TABLE 3: DURATION OF SONGS BEGINNING ON B AND ENDING ON E.
(i.e., with the last phrase incomplete).

No. of phrases	No. of songs	Average duration of song (in seconds)
$\frac{4}{5}$	4	2.37
$1\frac{4}{5}$	10	4.74
$2\frac{4}{5}$	91	7.42
$3\frac{4}{5}$	46	10.50

TOTAL 151

Although these timings involved considerable effort and time, they cannot be considered a truly adequate sample.

It is interesting to note (Table 2) that the duration of phrase, as measured by dividing total song-duration by phrase-number, increases with the number of phrases per song. This might theoretically be due to the existence of slight pauses between one phrase and the next, in which case the total duration of a song would include an increasing proportion of pauses as the number of phrases increased: unfortunately, no special attention was paid to this point. However, casual listening indicated that pauses certainly do not always occur; and the low figure for the considerable number of 3-phrase songs suggests the further possibility that, since the 3-phrase song is the normal length, it is sung rather more rapidly than those with other number of phrases.*

The B-E type songs, however, do not show the same feature for the $2\frac{4}{5}$ -phrase songs (admittedly on much smaller samples); and they are peculiar in the relatively long duration of the (very few) single $\frac{4}{5}$ -phrase songs. Here is an interesting little problem of bird behaviour for future observers to solve; all that they require is a stop-watch, a keen ear, and a reasonable modicum of patience.

It would be impossible in this paper to list the wide variety of

* Since this paragraph was written, J.S.H. noted the behaviour of a small group of birds in regard to pauses between phrases. Of 16 individual birds, the pause between successive phrases was absent in 5, distinguishable but slight in 6, and definite or marked in 6. Thus "pausing" would be expected to have a statistical effect on increasing the apparent phrase-duration as the number of phrases increased.

uncommon variants. P.E.B. recorded songs ending on every note, and starting on every note except E. It should be mentioned, however, that sometimes a bird may be startled into finishing its song prematurely or "unnaturally." Furthermore, a note is occasionally missed from a song; e.g. B-E $2\frac{4}{5}$, but with both A notes missing. Sometimes the note is missed in one or two phrases, but not in all; e.g. B-A, 3, with the first two A's missing but the last (the final note of the song) clearly sounded.

More work is needed on the peculiarities of individual birds. Many birds sing at either a quite distinctive pitch or with a distinctive rhythm. P.E.B. heard one bird, with a distinctive high pitch and a strangely "rhythmic" delivery, which was present for three seasons in the same area. We believe that work on individual birds would be very profitable, and it is much to be hoped that others will follow up this approach. But it may be remarked that individual birds may vary both the number of phrases in the song and the note on which they end. This example of six consecutive songs from one individual bird will make this point clear: B-A, 4; B-E, $3\frac{4}{5}$; B-A, 4; B-E, $3\frac{4}{5}$; B-A, 2; B-E, $2\frac{4}{5}$.

SUMMARY.

Nearly 4,800 songs of the Woodpigeon were recorded, and it was found that the accepted version was incorrect. Of 4,449 recorded by P.E.B. almost 97 per cent began on what has usually been described as the second note of the phrase, and nearly 80 per cent ended on what has usually been called the first, i.e., if the notation ABCDE be used for the accepted version of the first phrase, the actual norm is BCDEA. This leaves only 3 per cent beginning on A, which has usually been supposed to be the first note. J.S.H., however, considers that a further small percentage begins with a slight or "suppressed" A-note.

Songs may comprise from one to six phrases, but 3-phrase songs constituted nearly three-fifths of the total, while about a quarter had 2 phrases, and about one-eighth had 4. With increasing number of phrases (a) the last phrase is less frequently completed, and (b) the average duration of phrase increases. Numerous individual variations occur, and would repay further study.

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DISPLACEMENT-SLEEPING IN THE AVOCET AND OYSTERCATCHER AS A REACTION TO PREDATORS.

BY

K. E. L. SIMMONS AND R. W. CROWE.

(Illustrations by Robert Gillmor.)

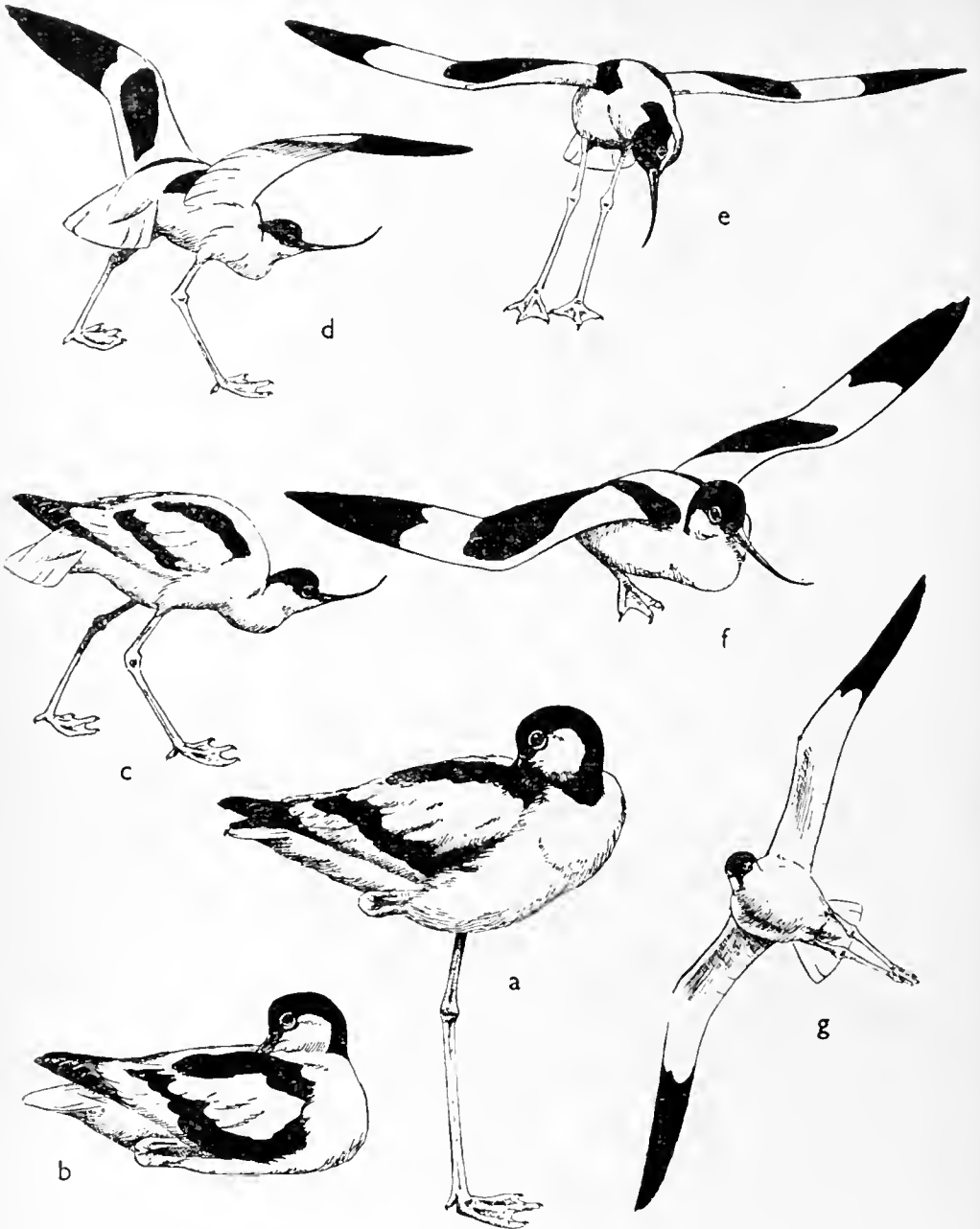
MAKKINK'S studies (1936, 1942) on the behaviour of the Avocet (*Recurvirostra avoetia*) and the Oystercatcher (*Hæmatopus ostralegus*) have shown that, at certain points during intraspecific fighting, both these species may assume a "pseudo"-sleeping attitude in which the bill is placed in the scapulars, as in real sleeping, but the eye kept open (figs. a, b). Recently, Williamson (1950, 1952) has further noted that in the Oystercatcher this behaviour may also occur as a response to human disturbance, both on the breeding ground and in the flock. The present paper aims to record similar behaviour in the Avocet and to discuss the reaction, in both species, against the background of recent theories on the nature of predator-reactions in general.

Observations on Avocets were made on Texel, Netherlands, mainly in June, 1952, but unavoidable delays in publication have allowed the inclusion of some observations made in May, 1953. We watched several pairs of these fascinating and attractive birds at various stages of breeding activity: some had eggs, some were at the hatching stage and others had small or semi-large young. A full, illustrated, account of our work will appear elsewhere in conjunction with studies on the Little Ringed and Kentish Plovers (*Charadrius dubius* and *alexandrinus*) and some other waders.

We are indebted to Dr. N. Tinbergen for reading over the draft of the paper, and to Robert Gillmor for the illustrations.

"PSEUDO"-SLEEPING AND OTHER DISPLACEMENT-ACTIVITIES PERFORMED BY AVOCETS AS PREDATOR-REACTIONS.

As in the Oystercatcher (Williamson, *op. cit.*), the "pseudo"-sleeping shown by breeding Avocets to human intruders is a low-intensity reaction (see below); this seems generally the case for the displacement-activities of waders in such circumstances—Simmons (1951, 1952). When the Avocets are really worked-up, they perform distraction-display and may even fly at the observer though this "attack" is seldom, if ever, pressed home, the birds swerving off without striking. We only definitely recorded "pseudo"-sleeping from those birds with eggs, though probably it may also occur when the young are large, as Williamson notes in the Oystercatcher. The usual procedure of Avocets with eggs or young, both on the ground and in the water, is to perform a type of crouch-run away from the observer (fig. c), as recorded



AVOCET (*Recurvirostra avosetta*).

DISPLACEMENT-SLEEPING AND SOME OTHER REACTIONS TOWARDS PREDATORS.

(Drawn by ROBERT GILLMOR.)

(See text.)

in the Kentish Plover (Simmons, 1951), Little Ringed Plover and Ringed Plover (*C. hiaticula*) (Armstrong, 1952; Simmons, 1953), though in the Avocet this is a deliberate trot rather than a fast run. Birds with eggs then usually follow this up with a displacement-activity, either feeding, brooding, preening or sleeping, and rarely pass on to more elaborate behaviour as do those with

young. The "pseudo"-sleeping attitude may be performed while standing on one or both legs and also when sitting down. In this last instance we had the definite impression that the brooding and sleeping attitudes were being combined, as is so often the case with undisturbed incubating birds (see Brown, 1950, p. 40). If the watcher is relatively inactive and does not follow the performing bird, it may keep up its displacement-activities for several minutes at a stretch. The feeding actions used are the sideways sweeping ones ("food-mowing," Makkink, 1936) functionally employed in the water, and correspondingly seem very inappropriate when performed out of context on land. Birds with small young also show the lower-intensity brooding and feeding movements (at least) but frequently these are "by-passed" and the simple crouch-run develops into moving distraction-displays with open wings (*e.g.* fig. d). These in turn may be followed by more elaborate, stationary or semi-stationary displays facing the observer (figs. e, f), including the curious "drifting" or "drunken" one (e), and by "attack" (fig. g). Birds with eggs, when highly activated, may occasionally perform the more elaborate behaviour.

A REVIEW OF THE NATURE OF "PSEUDO"-SLEEPING.

It is now generally agreed (Tinbergen, 1940, 1952; Kortlandt, 1940; and others) that "pseudo"-sleeping, in both Avocet and Oystercatcher, is a displacement-activity in the true sense of the word, *i.e.* "an activity belonging to the executive motor pattern of an instinct other than the instinct(s) activated" (Tinbergen, 1952). In view of this, the term "displacement-sleeping" is preferable to "pseudo-sleeping" because some "pseudo" or "false" activities need not necessarily be displacements in the strict sense. Further, it is generally agreed that, in its fighting context, sleeping occurs when the urges to attack and to withdraw are in equilibrium (Makkink, 1942), each drive inhibiting the expression of the other so that a displacement-activity results, as an outlet for these thwarted impulses. This last interpretation is opposed by Makkink (*loc. cit.*) who doubts the value of displacement-sleeping "as a ventilation valve for energy, the more so as the sleeping attitude is preeminently suited for resting because requiring the least energy." Edwards *et al.* (1948) argue that "it is quite possible for the emotional tension to be dissipated merely by the forced assumption of a resting attitude." Both these views ignore one important point. Essentially we have to do with the dissipation of *nervous* not muscular discharge. The behaviour under review is thus an effective channel for the release of blocked motivation because sleep, as shown conclusively by the experiments of Hess (1944), "depends on activity of a strictly localized part of the brain," and "behaves exactly like movements generally recognized to be dependent on nervous activity" (Tinbergen,

1952). This shows "that there is no inconsistency in the occurrence of sleep as a displacement activity."

In its fighting context then, displacement-sleeping is an outcome of the joint stimulation of the urges to attack and withdraw. Is the activity in its second role as a predator-reaction a result of similar drives? Williamson (*op. cit.*) thinks not and suggests that here it is due to a "state of low emotional value in which the impulse to carry on normal routine (feeding, preening, etc) was inhibited, and nicely balanced, by the declining impulse to remonstrate against my presence." However, we would suggest that in displacement-sleeping, as in so many other predator-reactions (distraction-display, intention-movements, displacement-activities, "mobbing," etc.), basically the same dual motivation is in operation as in intraspecific fighting; this concept has recently been reviewed in some detail by Simmons (1952), and by Hinde (1952) and Tinbergen (1952). One can see movements of this kind alternating with escape and aggressive behaviour; in the case of the Avocet, flying away and eroueh-running on the one hand, and aerial "attaek" on the other. The theory gains further support when one considers that many of the displacement-activities possessed by Avocet (brooding, sleeping, feeding) and Oystereatcher (brooding, sleeping) are common to both the situations under question, as they are in the Little Ringed, Kentish and Ringed Plovers (Simmons, 1953). It is unlikely that in all these instances the underlying causes are different in the two contexts.*

Finally, a word on possible function. Williamson (*op. cit.*) records displacement-sleeping from Oystereatchers disturbed when in flock, outside the breeding-season. K.E.L.S. has a single record, from Egypt in the winter of 1949-50, of a rather "tame" Avocet which, as he stalked it, initially performed displacement food-mowing, first on land and then in the water, before flying away. When the bird was again approached, it displacement-slept in shallow water. These instances support the view that sleeping, and the other displacements mentioned, are low-intensity reactions in which neither of the two drives that produce them are strong ones. With breeding and non-breeding birds alike, when the escape element grows in intensity the birds move off; in those Avocets and the more northern Oystercatchers with young, an increase in the strength of the aggressive element produces distraction-display. By including displacement-sleeping in the list of the Oystereatcher's distraction-displays, Williamson (*op. cit.*) implies that the activity has been selected for a deflection function. If this were so, as N. Tinbergen points out (*in litt.*), then the sleeping posture shown as a predator-reaction should be different

* In a very recent contribution (*antea* pp. 108-110), appearing since the present paper was accepted for publication, Williamson has changed his views, without reference to his former ones, now holding that in all cases displacement-sleeping appears "when the impulse to attack or remonstrate against intrusion is balanced by the desire to withdraw from conflict."

from that appearing in intraspecific fighting. We believe that sleeping and other displacements performed as predator-reactions (with the probable exception of brooding in Oystercatchers) are merely by-products of the internal state and are not distraction-displays in the strict sense. No one would claim, for instance, that the less spectacular head-scratching and defaecating movements shown by Little Ringed Plovers, when disturbed with eggs or young, had an evolved deflection function. It is because so many of the activities performed by breeding birds to predators cannot be classed under such restricted terms as "diversionary display" (Armstrong, 1949) or "distraction-display" that the more general term "predator-reaction" has been suggested (Simmons, 1952). The context in which this last term is used will indicate whether breeding or non-breeding birds are concerned.

SUMMARY.

The displacement-sleeping activity of the Avocet and Oystercatcher is reviewed in its role as a predator-reaction, especially as shown by breeding birds. The view is put forward that this behaviour, both as an element of intraspecific fighting and of predator-reaction, is a result of the joint stimulation, at relatively low-intensity, of attack and escape. Some other displacement-activities of a similar nature are also dealt with.

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NOTES.

Effective distraction display by Mallard.—As only a few observations have been recorded indicating the effectiveness of distraction display by a parent bird in deflecting the attention of a potential predator from the young (*Bird Display*, pp. 104-105) the following incident may be of interest. On April 18th, 1953, a Mute Swan (*Cygnus olor*) whose mate was incubating on the margin of a pond attacked a Mallard (*Anas platyrhynchos*) conveying six small ducklings. The duck half-flew and half-swam for a few yards in front of the Swan while the ducklings swam away. In endeavouring to return to their parent they steered towards her and again aroused the attention of the Swan. He made towards them; whereupon the duck flew a few feet and sprawled, flapping, on the water between the Swan and the ducklings, effectively deflecting his attention while the frightened ducklings made for safety. The Swan, having desisted from following the duck, which was now swimming away, went towards his sitting mate, picking at the surface of the water and rearing up with flapping wings—displacement activities similar to those in which Whooper Swans (*C. cygnus*) engage after an altercation. As Swans will seize and drown other birds it seems probable that the duck's distraction display saved one of the ducklings from destruction by preventing the Swan's attack from being pressed home.

In this connection, it is of interest to draw attention to the fact that J. R. M. Tennent (*antea*, vol. xli, p. 25) described a Canada Goose (*Branta canadensis*) effectively distracting the attention of an aggressive Mute Swan from the young of another pair of Canada Geese.

EDWARD A. ARMSTRONG.

Curlew eating winkles.—On September 5th, 1950, at Walton-ferry, Suffolk, I watched a Curlew (*Numenius arquata*) eat two winkles. (*Littorina* sp.). The first was picked up in the tip of the bill and worked upwards into the gape by a series of fantastic contortions. The hard shell and the roundness of the winkle, combined with the length of its own bill, caused the bird great difficulty. Several times the winkle slid back to the tip of the bill, and often fell to the ground again when almost in the Curlew's gape. Eventually, after persisting for nearly twenty minutes, the

bird managed to complete its efforts and swallowed the wrinkle whole, by a series of vigorous gulps.

Standing motionless for a few minutes, the Curlew then began a further search for food, and seizing another wrinkle, proceeded to tackle it in the same way as before. After two unsuccessful attempts it held the wrinkle in the tip of its bill and struck it several times against a large stone, presumably smashing the shell, for the creature was immediately swallowed with comparative ease.

J. T. FENTON.

Numbers of Whimbrel inland in Somerset.—Exceptional numbers of Whimbrel (*Numenius phaeopus*) occurred inland at Cheddar reservoir, Somerset, during the first and second weeks of May, 1953. 90-100 Whimbrel flying in one long line, from a southerly direction, settled into the reservoir on May 3rd, and clustered on the parapet track and the embankment for about ten minutes. On May 9th, 31 were counted; the rangers also reported large numbers of "small curlews" daily visiting the reservoir in early May. There is one other instance (*antea*, vol. xli, p. 89) of approximately 100 Whimbrel recorded inland at Wylam, Northumberland, September, 1947, otherwise there appear to be no other comparable inland records for the British Isles.

BERNARD KING.

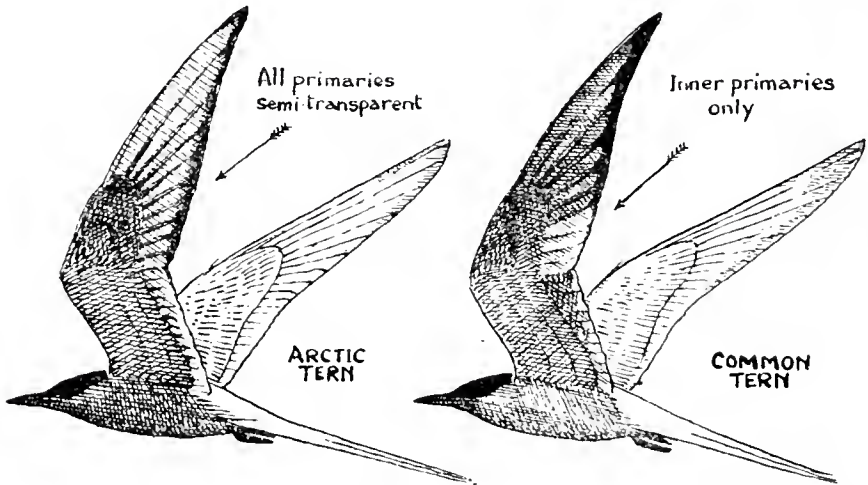
Fledging period of Redshank.—In a marshy field of 22 acres, five nests of Redshank (*Tringa totanus*) were known on May 1st, 1952. The first two broods hatched on May 14th and 8 young were ringed a few hours after hatching. On June 6th in this field I saw a young Redshank on the wing. It flew for 80-100 yards. I watched it carefully and could plainly see the ring on its leg. Next day a party from the Penrith N.H.S. were over the field and a young ringed bird was again seen in the air, flying a similar distance. On June 8th two young ringed birds were seen flying. No other birds had been ringed to my knowledge within 8 or 10 miles of this field (near Appleby, Westmorland).

These dates give a fledging period of 23 days. *The Handbook* says "about a month but only estimated." R. W. ROBSON.

[It is interesting to compare this observation with that of P. A. Rayfield (*antea*, vol. xxxvii, pp. 216-217), who recorded that a young Redshank which was 25 days old "after fluttering for a few yards . . . was caught." On the 26th day this bird, or another of the same brood, flew about 60 yards.—EDS.]

A distinction in flight between Arctic and Common Terns.—Mr. Gordon Rayner recently drew my attention to an elementary and infallible method of distinguishing the Arctic Tern (*Sterna macrura*) from the Common Tern (*S. hirundo*) on the wing, which, although widely used by observers in Scandinavia and the Low

Countries seems to have been completely overlooked or ignored by British writers on bird identification.



The distinction, which is said to apply equally to juveniles of both species, lies in the relative opacity of the primaries and is of value only when the birds are seen against the light. In the Arctic Tern *all* the primaries appear silvery and semi-transparent while in the Common only the innermost four show up as a light panel in marked contrast with the remainder. During the summer of 1952 I was able to test this theory among the adult terns at Cley, Norfolk and found it to be 100 per cent reliable. It is well illustrated on plates 35 and 43 in *Birds of the Ocean* by W. B. Alexander and observers of inshore or cross-country tern migration should find it invaluable in separating the hitherto well-nigh impossible "comic" terns.

R. A. RICHARDSON.

[Though a number of British works of reference, including *The Handbook*, describe and even illustrate the difference in the outer primaries of the two terns, they all appear to ignore its value as a field-character; yet even in this country this means of distinction has long been used by some. Whether it is a hundred per cent reliable is debatable, for there is considerable individual variation in both species in the width of the dark line on the inner web.—EDS.]

Aggressive behaviour in Stock Doves.—Similar display to that described below has been noted periodically over the past two or three years, always in spring and always in the same tree. The pattern of behaviour became very clear on March 14th, 1952, when the most intense display of all was noted.

At Apperley Bridge, Yorkshire, two Stock Doves (*Columba oenas*) were perched in a large ash tree about 150 yards from the sycamore in which they regularly nest. When two Jackdaws (*Corvus monedula*) came into the tree, which they frequently

visit to drink from a water-filled hole, one Stock Dove flew as if to land on one of the Jackdaws from behind, thus forcing it to move away. The Jackdaw flew only a short distance, to another branch of the same tree whereupon the Stock Dove made exactly the same flight to alight at the spot from which the Jackdaw was hustled off almost before it had settled. This action was repeated time and time again and at its intensest meant that for as much as two minutes neither Jackdaw nor Stock Dove was at rest for more than a few seconds. For a time both Jackdaws, in turn, were kept on the move in those way. Then for a while no further reaction was forthcoming from the Stock Dove and it and the Jackdaws had a short respite. This was the only time the Jackdaws were allowed to settle (for more than a few seconds) in this particular tree when Stock Doves were seen to be present. At times both Stock Doves joined in against both Jackdaws, but the second bird was much more half-hearted in its attacks and more frequently only one was involved. The same pattern of behaviour was noted on other occasions when only one Stock Dove was present. The display always ended completely only when the Jackdaw(s) left the tree. The Stock Dove always seemed to have the upper-hand and possess greater manœuvrability among the branches of the tree. Wing-beats were very rapid, the Stock Dove appeared to drive the Jackdaw from its perches with a sort of winnowing action.

I am grateful to Ralph Chislett for drawing my attention to a record of comparable behaviour in Stock Doves towards Little Owls (*Athene noctua*). (See under Little Owl, *Yorkshire, N.U. Ornith. Report*, 1948). This report describes one instance of a Stock Dove fracturing a Little Owl's leg and mentions another in which a similar happening was followed by the pair of doves attacking and killing the owl. As Lorenz points out, the name dove is not always synonymous with peacefulness.

The behaviour may possibly be connected with competition for nest-sites although in the case described above it was observed 150 yards from the Stock Dove's regular breeding place and was provoked by the Jackdaws coming to a water-filled hole.

R. F. DICKENS.

Woodpigeon covering eggs.—On August 1st, 1952, I found a nest of a Woodpigeon (*Columba palumbus*) containing 2 eggs 20 feet up in an alder at Marbury, near Great Budworth, Cheshire. The eggs were covered with little twigs, about two dozen in all. I visited the nest on the next four days and each time the eggs were covered. On the 6th I approached quietly and from behind a bush saw the bird on its nest. When I moved the bird at once perched on the side of its nest and quickly covered its eggs, but in its hurry not quite so completely as before. I visited the nest on the next three days and the eggs were always

covered. On the 11th the eggs were hatching and were still partly covered. On the 12th they had hatched and from then no covering was used. The young birds eventually flew. G. TRELFA.

Grass found in stomach of Little Owl.—On June 22nd, 1952, I obtained a young Little Owl (*Athene noctua*), which had been dug out from a burrow under a tree by my dog. Its stomach contained many beetle remains, including wings of *Carabus violaceus* (L.) and *Necrophorus vestigator* H., and a considerable quantity of grass. There were three main pieces: one 9 inches long, dry and yellowish, frayed in the middle; and two much thinner and darker, probably stained, one very frayed, 3.1 and 3.5 inches long. There were also five small pieces between $\frac{1}{2}$ and $1\frac{1}{2}$ inches long, and 8 more tangled up with small feathers and beetle remains.

DAVID POULTER.

[Both "grass" and "moss" are mentioned among the gizzard contents of individual birds in the Report of the Little Owl Food Inquiry, 1936-37 (*antea*, vol. xxxi, see p. 185), but there is no indication of any quantity comparable with that recorded here.—EDS.]

Swift roosting in tree.—On the night of July 26th, 1953, at Cromer, Norfolk, I was very surprised to see a Swift (*Apus apus*) alight on the branch of a tree to roost. At 20.30 hours G.M.T. the bird flew to one of the topmost, outside branches of a sycamore tree on the edge of a wood, and clung in a vertical position on it. After some shuffling of its wings and tail it finally remained quite still in spite of the movement of the tree which was not inconsiderable. As it was still there some 30 minutes later, when it was almost dark, I presume that it remained all night. *The Handbook* states that roosting details of the swift are meagre and it mentions only the eaves of houses. R. A. F. Cox.

[Dr. J. Koskimies has recently informed us that over the greater part of Finland Swifts nest, and doubtless roost, exclusively in forest trees.—EDS.]

Communal spirit in Jackdaws.—During the 30 or more years that I have lived in Pootings in Kent, no Jackdaw (*Corvus monedula*) has ever had the temerity to nest in the area. Apart from a few birds which accompany passing flocks of Rooks (*C. frugilegus*) they never rest here. But in May, 1953, a pair of Jackdaws arrived and most surreptitiously made their nest in the chimney of a neighbouring house. It had been decided that their presence was not welcome in the garden so that at the end of May the cock bird was shot and three days later the hen shared the same fate. The next morning from the clamour which proceeded from the roof it was clear that well-grown young had been orphaned.

In a few hours a flock of Jackdaws numbering over a dozen

appeared soaring over the house attracted by the calls of the fledglings. After settling on the roof some four birds, as far as I could ascertain, were delegated to feed the waifs. Four days later the now fledged young were enticed out of the nesting hole and were led away by their rescuers whilst uttering their "Kiaw" call, which Konrad Lorenz interprets as their homeward note (*King Solomon's Ring*, 1952). It should be added that the nearest colony of Jackdaws is situated some six miles away.

PHILIP MANSON-BAHR.

Magpies attacking Hobbies.—In Switzerland on June 23rd, 1953, I watched whilst two Magpies (*Pica pica*), each stationed on a branch leading down from opposite sides to a nest in a lake-side poplar tree, alternately attacked a Hobby (*Falco subbuteo*) that was vigorously defending it. Each time a Magpie attacked, the Hobby chased it out of the nest and out onto the branch, only to leave an opening for the other Magpie to enter the undefended nest behind her. The Hobby then rushed back into the nest and chased the second Magpie out onto the other branch, and so on alternately, the Magpies attacking and being driven out in turn. All this was quick action, and in a minute or two came a lull with the Magpies perched close to the nest on their respective branches, and the screaming Hobby standing at bay in the nest; but then she seemed to lose her nerve and flew off, whereupon both Magpies hopped down into the nest and then also flew off leaving it empty. Meantime the other Hobby had merely swept to and fro past the more outlying of the two Magpies, only causing the latter to duck momentarily each time.

A. L. W. MAYO.

[It should be pointed out that it is not possible to be certain that the nest contained eggs before the Magpies raided it, because although Mr. Mayo climbed up immediately after the events described above had taken place, he had not examined it before and there was no sign of egg-shell or yolk in the nest. It seems, however, more than likely that eggs had been laid, because otherwise it is improbable that either the Magpies in attack or the Hobby in defence would have behaved with such persistence. Further, it would have been an unusually late date for eggs not to have been laid.—Eds.]

Meadow Pipits swimming in calm water.—At Cheddar Reservoir, Somerset, on October 12th, 1952, approximately 20 Meadow Pipits (*Anthus pratensis*) were gathered on the parapet actively engaged in obtaining winged insects or bathing and preening close to the water's edge. Of these, two birds in particular attracted the writer's attention as they stood thigh deep in water bathing vigorously. Though the water at this part of the reservoir was comparatively calm, ripples which occasionally rebounded from the concrete parapet were sufficiently strong to carry the

pipits into deep water at least eighteen inches from where they had originally stood. But though the birds were well out of their depth they in no way appeared alarmed—indeed they bobbed about on the surface of the water like large brown floating corks—then quietly swam back to the water's edge. This interesting performance was repeated at least three times over a short period—eventually the whole party departed when they were disturbed by a car passing along the reservoir track.

BERNARD KING.

REVIEWS.

Social Behaviour in Animals. By N. Tinbergen. (Methuen, London, 1953). 12s.6d. In *The Study of Instinct* (reviewed in vol. xlv, p. 182) Dr. Tinbergen was concerned with the entire study of animal behaviour and with its results up to 1948. In the present, much smaller work he surveys rather more fully what is known about that part of the field which touches relations between two or more individual creatures. There is accordingly a considerable overlap which is made more evident by the number of examples and by the proportion of the 69 line illustrations which resemble those used in the earlier work or are actually borrowed from it. Nevertheless it would be a serious mistake to be influenced by the impression that this is merely a rehash; it is actually for the field ornithologist the more interesting book of the two, since it reviews more of the facts and significance of what takes place and is less occupied by background and technique. It does however conclude with *Some Hints for Research in Animal Sociology* which stress the importance of the contribution which has been and can still be made by "amateurs." He deprecates a situation in which

"research becomes increasingly the monopoly of professional specialists.

Many amateurs feel that they can no longer keep pace with it, let alone produce new and original contributions. I don't think such pessimism is justified. It is not only possible, it is also very desirable that non-professionals go on to contribute, for lack of specialised training has advantages as well as disadvantages. Of course training gives knowledge and discipline of thought but it often tends to smother originality of outlook."

Certainly if anything can enable the "amateur" to keep abreast it is the production of such authoritative and stimulating surveys, based on a wide knowledge of the literature, so much of which (as Dr. Tinbergen points out) is accessible only to those who read German. He also rightly emphasises the importance of illustration in this subject: "one mediocre drawing or photograph is often more useful than two pages of accurate but necessarily dull description." What a pleasure it is to meet such consistent awareness that dullness and jargon are not matters to be complacent about, but are to be avoided nearly always and to be apologised for in the rare cases where no escape from them can be found. And how sobering it is to have to recognise that an author to whom our tongue is not native should have mastered the art of saying what he means on these difficult subjects so much better than some of those who, if they cannot write English, certainly cannot write any other language either. If an occasional turn of phrase betrays Dr. Tinbergen's origin it only serves to remind the reader to admire and be grateful for the pains which the author has taken for his sake. One minor slip in translation should however, be pointed out; on p. 106 "Blue Heron" is a correct literal rendering of the Dutch name for *Ardea cinerea* but it is not an accepted English name, while "Grey Heron" for the same species on p. 32 is also unusual, although the context here makes clear which species is meant.

E.M.N.

Bird Ringing. By R. M. Lockley and Rosemary Russell. (Crosby Lockwood, London, 1953). 9s. 6d.

Few ringers have longer and broader experience of marking birds than Mr.

Lockley, and the authors' knowledge has been supplemented by information from a wide circle of ringers to compile this little book. It serves as a useful introduction to the subject, with chapters on the history of bird marking and on the value of ringing, touching on life-history studies, migration and homing; practical advice is given on handling, weighing and measuring birds, handling rings, colour-marking, keeping records, and the like.

The statement is made that the random ringing of large numbers of nestlings, especially of Passerines, is unprofitable and should be discouraged. This view however, does not give sufficient weight to the vital facts that it is only by ringing nestlings that (a) the age of most species can be correctly ascertained and (b) the place of birth be known. Only a small proportion of nestlings are recovered after they leave the vicinity of the nest, but the value of each recovery thereafter is generally much greater than for example that of a migrant ringed on passage, which at best can be expected to provide a tantalizing half-story.

Nearly half the book is devoted to descriptions of traps, nets and other means of catching birds, and in this section there are helpful diagrams on almost every page. Several of the methods described (for example, for catching geese) will be unfamiliar to most trappers in this country, but some of them have been evolved abroad and it seems uncertain whether all would be effective here. The authors go further than would the reviewer in the recommendation of the use of live decoy birds, and on the question of bait it is surprising to read that bread will attract "finch and warbler alike." Much of Mr. Lockley's ringing has been on the grand scale, and this is perhaps reflected in the amount of space devoted to Heligoland traps, duck decoys, rocket-nets. The average back-garden and week-end ringer may wish there had been fuller treatment of the more modest traps, their merits, demerits, limitations and effectiveness. The authors had at their disposal considerably more material and diagrams than they have used, but information on the relative efficiency of the various designs and modifications, and their best siting, has yet to be assembled and tested.

P.A.D.H.

The Herring Gull's World. By Niko Tinbergen. (Collins, New Naturalist Monograph, London, 1953). 18s.

THIS is a book that the reader will be likely to carry with him to board and bath and bed till he has read it through—and then to begin again! Seldom, if ever, can the behaviour of any animal have been studied in such detail and presented with such lucidity. The question as to why a bird performs any act usually has two answers, the biological (utility of the act to the species) and the psychological (motive impelling the acting bird). The author of this book endeavours, and in most cases succeeds, to explain his subject's behaviour on both counts. All of the Herring Gull's reactions to its environment seem to have been covered, except the relative wildness and tameness shown by different populations and individuals towards man. If such matters as the finding and recognition of food have been dealt with in a comparatively cursory and descriptive manner, this is only evident because of the extreme detail and thoroughness with which the social and reproductive behaviour has been analysed.

It is a triumph for the author that this book, in spite of its great store of information, does not merely satisfy the reader's curiosity about the Herring Gull, but provokes in his mind further questions concerning it. Why does not a beaten gull adopt the posture used by juveniles and females to inhibit attack? Why should a gull be stimulated to attack a bird that threatens or a bird that shows fear whilst ignoring those that do neither? Are the gulls that gather to watch a fight impelled by the same motives as the human (but hardly humane) beings who watch a boxing match? And if so what are those motives?

This work is, moreover, far more than just a book about a single species. The behaviour of many other creatures, from Man to the Grayling Butterfly, is discussed in detail wherever it is of help in clarifying gull behaviour. Indeed this book, like the studies it is based on, may not contribute to the reader's

peace of mind, since, as the author truly says: "It is as if the animals are continuously holding up a mirror in front of the observer, and it must be said that the reflection, if properly understood, is often rather embarrassing."

There is a most instructive foreword by Konrad Lorenz and there are numerous sketches and photographs illustrating postures and movements discussed in the text. If anyone interested in animal behaviour cannot afford to buy this book he must beg or steal it. D.G.

Checklist of New Zealand Birds. By the Checklist Committee (C.A. Fleming, Convener), Ornithological Society of New Zealand, Inc. (Published by A. H. & A. W. Reed, 1953, and obtainable from J. M. Cunningham, Hon. Sec. Orn. Soc. N.Z., 39 Renall Street, Masterton, N.Z.). 10s. 6d.

This valuable and well-edited summary of 80 pages is the work of the Ornithological Society of New Zealand which was founded in 1939 with objects which largely coincide with those of the British Trust for Ornithology. The number of species and acceptable subspecies listed for the New Zealand Region extending from Macquarie Island in the S.W. to Kermadec in the N.E. is 330. Non-passerines follow the classification of Peters, and Passerines (of which there are only 66) that of Stresemann. Only four Falconiformes are included, but nearly sixty petrels. Well-established vernacular names have been retained wherever possible, but certain inappropriate or misleading names have been superseded.

Of special interest to British ornithologists are the introduced forms and those which occur naturally both in New Zealand and Britain. Introduced birds common to both regions are the Canada Goose, Mute Swan, Mallard, Pheasant, Rock Dove, Little Owl, Skylark, Song Thrush, Blackbird, Dunnock, Greenfinch, Goldfinch, Redpoll, Chaffinch, Yellowhammer, Cirl Bunting, House Sparrow, Starling and Rook. Most of the Passerines named, including the relatively sedentary Blackbird, Dunnock, Greenfinch, Redpoll and Yellowhammer are credited with having spontaneously colonized islands separated by 3-400 miles of water from New Zealand.

Among naturally occurring species common to both regions, otherwise than as stragglers, are the Sooty Shearwater, Gannet, Cormorant, Bittern, Oystercatcher, Bar-tailed Godwit, Turnstone, Knot, Curlew Sandpiper, Great and Arctic Skuas and Barn Owl. The maps and index are helpful. E.M.N.

LETTERS.

ISLAND WRENS: CONDITIONS INFLUENCING SUBSPECIATION AND SURVIVAL.

To the Editors of BRITISH BIRDS.

SIRS,—The points which Mr. K. Williamson makes (*antea*, pp. 231-32) in connection with a remark of mine on the distribution of the Alaska Wren (*Troglodytes t. alascensis*) (*antea*, pp. 48-49) are of interest not only in regard to the evolution of wren races but also in connection with general problems involved in the adaptation of birds to insular habitats, so some further comments may not be out of place. In an earlier paper (*Ibis* (1951) 93: 599-601) Mr. Williamson referred to "the inability of *T. t. alascensis* Baird of the Pribilof Islands, to cross the 27 miles which separate St. George, where it is common, from St. Paul, where it is (or was) merely a vagrant" and he now finds unacceptable my criticism that this illustration does not give cogent support to his argument concerning the isolation of the Fair Isle stock of Wrens (*T. t. fridariensis*).

Bent (*U.S. Nat. Mus. Bull.*, 195: 164) quotes observations showing that Wrens were obtained on St. Paul in 1914 and 1915. Dr. Karl Kenyon, in the letter to which I referred, wrote (October 1st, 1951): "We often see two or three Wrens on St. Paul during the summer, but this year they seemed unusually abundant—we saw about a dozen." Thus the bird is, at least, a

fairly regular visitor rather than "merely a vagrant." It must be remembered that naturalists on St. Paul are usually so preoccupied with sealing that they have little time to look for Wrens or their nests. Quite possibly Wrens have bred and been overlooked.

Mr. Williamson says that, "A water-barrier, whether 25 or 2,500 miles wide, does not prevent vagrancy: the test is whether or not such a barrier effectively prevents the establishment and consolidation of breeding-colonies." But, however numerous the bird visitors to one island from another, they may not consolidate colonies there because the conditions are unfavourable, so the absence of such colonies is not, in itself, evidence of the efficacy of a water-barrier. Even if we accept the establishment of a breeding population as our criterion the Alaska Wren passes the test. Not only were "a considerable number" seen on Otter Island in 1918 (Heath, *Condor* (1920) 22: 49-55) but, according to observations quoted by Preble and McAtee (*N. Amer. Fauna* (1923): 46) and Bent, eleven were seen in 1915, Wrens bred in 1916, 1917, and 1918 and "they have since become well established there." Otter Island is only a few miles less distant than St. Paul from St. George Island. Thus the Alaska Wren cannot be cited in support of the view that some 25 miles of sea constitute a barrier effectively isolating a wren population.

Mr. Williamson's further records of vagrant wrens on Fair Isle will be awaited with interest. If Shetland Wrens (*T. t. zelandicus*) more than occasionally enter so small a population as that indicated by the figure quoted for 1952 it would be surprising if the morphological characters of the Fair Isle stock remained constant.

Mr. Williamson states that his observations do not support the view that a severe "continental" climate is inimical to the survival of stocks of insular wrens but his argument would have been strengthened if he had been able to cite data showing numbers of Wrens trapped on Fair Isle after severe winters as well as after moderate winters. It is to be hoped that in a future contribution he will publish the numbers of Wrens heard singing in breeding territories—a better basis for comparison than numbers trapped—and also give the proportion of birds re-trapped.

High winds are unfavourable to island wrens, and in considering climatic conditions on St. Paul more severe than on St. George I had in mind, not that it had a "severe continental climate," but that on the latter, with its rampart of high cliffs and rugged ridges inland there is better shelter for Wrens than on St. Paul, much of which is a low, exposed, rolling plateau, swept by gales of over 27 knots on an average of not less than 10 days monthly during a third of the year and with an average relative humidity never less than 91 per cent. On this island the vegetation tends to be stunted, with fewer patches of more luxuriant growth than on St. George. On islands such as St. Kilda, Wrens prefer territories containing such patches of rank vegetation, sheltering the organisms on which they feed their young. Thus high winds limit the extent and success of breeding as well as winter foraging.

In a paper on the St. Kilda Wren (*T. t. hirtensis*) (*Auk* (1953) 70: 127-50) I cited observations showing that, contrary to views which have been expressed (Nicholson and Fisher, (1940) *antea*, vol. xxxiv: 29-35; Fisher, (1948) *Bull. Brit. Orn. Cl.* 68: 66-71; *New Nat. Journ.* (1948) 1: 91-108), the population fluctuates considerably although the climate is mild, so far as temperature is concerned, and that such fluctuations occur in the populations of other island races, including the Alaska Wren. It is of interest that data contributed to my paper by Mr. I. J. Ferguson-Lees show that there was an overflow of Wrens to "inland" areas on St. Kilda in 1948 as on Fair Isle that year. I found that inland territories were unoccupied in 1951—coinciding with the reduction in numbers on Fair Isle indicated by Mr. Williamson's figures. This suggests that the same factors may have been involved and that these may have been climatic.

On St. Kilda, and evidently also on Fair Isle, reduction of the wren popula-

tion occurs during mild "maritime" winters but there is evidence, too, that insular stocks suffer in snowy winters. Mr. and Mrs. L. S. V. Venables have shown (*J. Anim. Ecol.* (1948) 17: 66-74) that in Kergord Plantation, Shetland, where as many as 10 Wrens had been noted during one visit of a series made in the two years preceding the snowy winter of 1946-47, only one Wren was seen after it, up to the conclusion of observations in July, 1947. I have cited data (*Ibis* (1950) 92: 384-401) suggesting that the snowy winter and spring of 1948-49 in Iceland reduced the number of Wrens (*T. t. islandicus*).

There is abundant evidence that European Wrens (*T. t. troglodytes*) perish in large numbers during cold, snowy winters here and on the continent, but some observations recorded in my forthcoming book on *The Wren* (Collins) suggest that they are particularly vulnerable to cold and humidity together, and perhaps also to frequent rapid changes in the weather in winter.

As we know so little about the factors governing alterations in the populations of insular wrens and their reproductive success it would be unwise to dogmatize concerning the pre-eminence of any particular factor. Mr. Williamson's observations on Fair Isle are all the more valuable owing to the meagreness of our information concerning the populations of wrens on islands and his further data will be expectantly awaited.

EDWARD A. ARMSTRONG.

[In order to bring to an end this discussion we have shown this letter from the Rev. E. A. Armstrong to Mr. Kenneth Williamson and so given him the opportunity to make a reply. Mr. Williamson has sent us a letter reaffirming his case and this, having been shown to Mr. Armstrong, is printed below—Eds.]

To the Editors of BRITISH BIRDS.

SIRS,—The physical barrier is the first and, I still believe the most important limiting factor that the bird must surmount. Local climate and habitat preference are secondary. The history of birds on oceanic archipelagos the world over abounds in instances of the versatility, or adaptability, of the organism triumphing over new conditions when the occasional accident of down-wind drift has enabled an effective group to close a water-barrier. In our own day we have seen a 2,000-mile gap in the north-east Atlantic breached by the Fieldfare (*Turdus pilaris*) in the most sensational fashion, followed by colonisation of a completely new environment (Salomonsen, *Proc. Xth Int. Orn. Congress*, pp. 515-526). Such cases serve to emphasise in the most striking fashion the pre-eminence of the physical barrier over local climatic and ecological conditions.

What had long been an effective barrier for *Troglodytes t. alascensis* is now apparently in process of disappearing. The dates of colonisation of Otter and of greater frequency on St. Paul strongly suggest that the final assault on St. Paul will come from the foothold on Otter Island, not from St. George. It is to be hoped that American ornithologists will be able to record the future history of the Alaskan Wren in detail: it is an interesting case.

I am not happy that there is sufficient evidence to show that insular stocks of wrens suffer heavy mortality in cold, snowy winters. I repeat that the best wren year I knew in Faeroe was after the unprecedentedly snowy winter of 1946-7. Absence from an unnatural habitat (and young plantations at Kergord and Torshavn are *not* natural habitats for *T. t. zetlandicus* and *T. t. borealis*) should not be taken as an indication of a fall in population; it should imply local movement. No Faeroe or Shetland Wren lives much more than a mile from the coast (and the great majority much less), and in the hardest winters this characteristic niche of insular wrens is never closed. It is a niche which is not available to the vast majority of European (and probably many Icelandic) Wrens, and for them the consequences are likely to be disastrous when frost and snow cut off their food supply.

KENNETH WILLIAMSON.

Date of Publication: December 11th.

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By

JAMES M. HARRISON,

D.S.C., M.R.C.S. ENG., L.R.C.P. LOND., F.Z.S., M.B.O.U
Vice-President of the British Ornithologists' Union.
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With a foreword by

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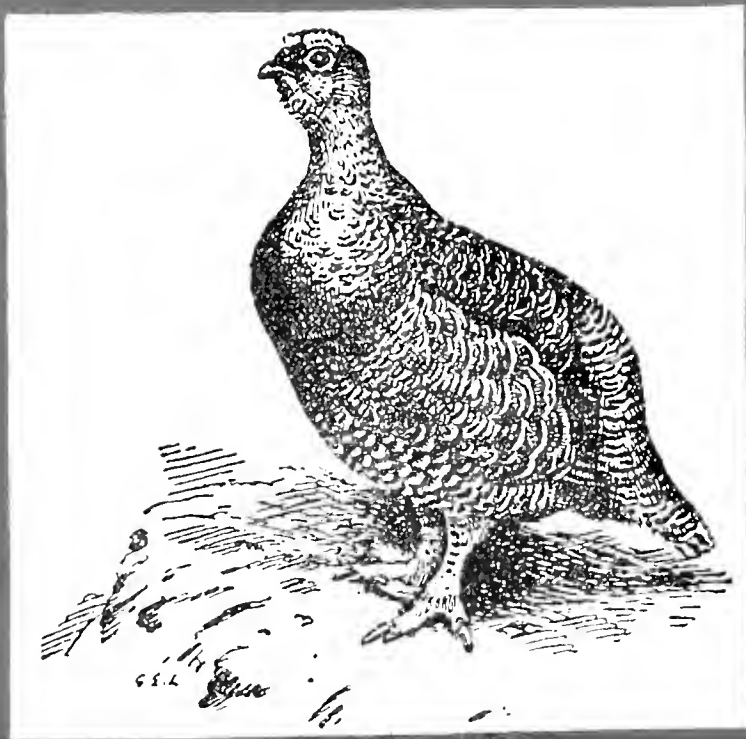
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BRITISH BIRDS

NUMBER 12, VOL. XLVI, DECEMBER, 1953.

REPORTS FROM BIRD OBSERVATORIES, 1952.

ONCE again we are glad to include a series of reports from the Bird Observatories. During 1952, one new Observatory—at Dungeness in Kent—was opened, thus bringing to eleven the total engaged in this kind of work, a total that has been further increased in 1953 by the formation of an Observatory on Bardsey Island off N. Wales (*cf. antea*, p. 272). Experimental work with Heligoland traps has been carried on elsewhere, notably at Portland Bill in Dorset and at Walberswick in Suffolk.

With this continued extension of the chain of Observatories not only does it become increasingly impracticable to present a series of reports along the lines hitherto followed, but it also means that there is an ever-growing pile of information of which the best use must somehow be made. We hope, therefore, to arrange a method of presentation for the future which will enable the records of extreme rarities at Observatories to be published at intervals within a reasonable period after they occur and, more important, which will include occasional but more detailed analytical work on the movements of the commoner species—of greater lasting value than the brief summaries of this kind hitherto given. Other occurrences at individual Observatories could then be reviewed briefly as are county bird reports at the moment.

Meanwhile, the reports from the separate Observatories (listed from north to south) follow the lines of those published in the last two years (*antea*, vol. xlv, pp. 223-245; vol. xlv, pp. 227-244 and 297-306); that is to say they are confined to the more unusual or spectacular records. We shall be publishing in the next number a few summaries of the movements of selected commoner species, but in their present form these have almost served their purpose and the records of most of the species covered last year show a pattern very similar to previous years and have therefore been omitted.

It will be seen that records of Red-headed Bunting (at Lundy, p. 437) have again been placed within square brackets. We stand by our original views in this respect in spite of the criticism levelled at us by Mr. Kenneth Williamson (*antea*, pp. 75-76). In a forthcoming number we will publish a note showing the extent to which this species, more so than most on the British list, is kept in captivity.

In conclusion, it must be stated that we have not seen details in support of the rarities mentioned here except in the case of those records which have already appeared in our pages.

FAIR ISLE BIRD OBSERVATORY, 1952.

(KENNETH WILLIAMSON).

THE accounts published below, in the main confined to the rare or the unusual, have been abstracted from the five issues of the *Fair Isle Bird Observatory Bulletin* (nos. 6-10) that contain records for 1952. The *Bulletin*, a eye-lo-styled production that is issued to those who are "Friends of Fair Isle" (annual subscription one guinea), contains much interesting information on the work in progress at Fair Isle and at other Observatories, as well as relevant observations from elsewhere, both in the British Isles and abroad.

The spring migration in Britain in 1952 was made significant by two periods of no little interest. A full discussion of these appears in the *Bulletin* and it is sufficient to say here that, firstly, on April 9th and 10th there developed a large-scale migration out of western and northern France, and, secondly, on May 5th and 6th there was a far more spectacular migrational drift, probably across the North Sea from the west German and Danish coasts, which resulted at Fair Isle in large numbers of Tree Pipits (*Anthus trivialis*) and Redstarts (*Phœnicurus phœnicurus*) as well as unusual quantities of Reed and Ortolan Buntings (*Emberiza schœniclus* and *hortulana*) (see notes under individual species). The same drift caused a large passage of Willow Warblers (*Phylloscopus trochilus*) at the Isle of May (*q.v.*), but there were comparatively few of this species at Fair Isle. It should be added that a few days before this there was a smaller and more normal, westwards drift of summer visitors; this covered the period April 30th to May 2nd (see notes under individual species).

The autumn, though bringing the usual rarities, was remarkable for a September migration whose poverty was reflected in the small numbers of such common species as Pied Flycatcher (*Muscicapa hypoleuca*) and Willow Warbler: the maximum number of each at Fair Isle was 6. There was, however, a strong immigration of Greenland and Iceland birds from late August to early October which has been fully analysed by K. Williamson in *Scot. Nat.*, vol. 65, pp. 65-94.

WHITE-FRONTED GOOSE (*Anser albifrons*).

An adult female of the Greenland race (*Anser a. flavirostris*), the second record for Fair Isle, was shot on November 5th.

QUAIL (*Coturnix coturnix*).

At least two pairs summered on the island.

IVORY GULL (*Pagophila eburnea*).

An adult male was picked up exhausted on the headland of Meoness on February 9th and died soon afterwards. It is now preserved as a mounted specimen in the Royal Scottish Museum.

TERN (*Sterna* sp.).

A medium-sized tern was seen on January 16th, the day following that on which a great gale swept across northern Scotland.

TURTLE DOVE (*Streptopelia turtur*).

3 on the extraordinarily early date of April 10th (among other records).

NIGHTJAR (*Caprimulgus europæus*).

One on May 10th—a very rare species at Fair Isle.

HOOPOE (*Upupa epops*).

One was watched having a battle of wits with a Merlin (*Falco columbarius*) above Wirvie on October 15th. The two were first seen at a height of about 200 ft., and within 5 minutes had risen so high that they were lost to sight. The Hoopoe's tactics were to climb in tight circles, and after a few minutes it was clearly getting the better of the situation. Its rounded wings gave it a better "lift" and the Merlin seemed unable to keep up with it except by making long, straight climbs which took it many yards distant from its prospective prey. Such climbs were followed by sudden stoops which the Hoopoe appeared to have little difficulty in avoiding, and after darting aside it continued with its spiralling, leaving the Merlin faced with another long climb to gain sufficient height.

WRYNECK (*Jynx torquilla*).

One on May 5th and 2 on May 6th. One on August 30th.

SHORT-TOED LARK (*Calandrella brachydactyla*).

One on October 6th and 7th was shot on the latter date and proved to be of the Eastern race (*C. b. longipennis*); another was watched between October 9th and 11th (for full details *vide antea*, pp. 210-211).

CRESTED LARK (*Galerida cristata*).

One on November 2nd (for full details *vide antea*, p. 211).

DIPPER (*Cinclus cinclus*).

A bird of the Black-bellied race (*C. c. cinclus*) was seen on the beach at Easter Lothar on October 13th.

REDSTART (*Phœnicurus phœnicurus*).

After a slight passage, on May 5th there occurred an invasion of 200 or more, increasing to over 300 next day; they had decreased to a tenth of this figure by the 7th. Small autumn passage.

BLACK REDSTART (*Phœnicurus ochrurus*).

Females were trapped on June 2nd and November 2nd, and 2 males were present on May 8th and 9th.

BLUETHROAT (*Luscinia svecica*).

Two males on May 9th and a female from May 10th to 12th. A male on October 4th, 2 birds on the 5th and 4 on the 6th; one male on October 15th.

MARSH WARBLER (*Acrocephalus palustris*).

One was trapped on October 6th.

BLACKCAP (*Sylvia atricapilla*).

A late bird was trapped on December 5th. (Otherwise a few in spring and autumn.)

BARRED WARBLER (*Sylvia nisoria*).

A first-winter bird trapped on August 20th. Another, seen on September 9th and 10th, was also trapped. A third was watched on September 30th.

CHIFFCHAFF (*Phylloscopus collybita*).

Autumn passage of "Northern" Chiffchaffs (*Ph. c. subsp.*) was from October 15th to 20th (8 on the 16th).

WILLOW WARBLER (*Phylloscopus trochilus*).

A few at the end of April and beginning of May, but no significant numbers until May 5th when over 60 were recorded. A further influx took place on

May 9th (50 plus) and numbers rose again on the 12th (21). On April 29th, May 13th and May 15th trapped individuals of the Northern race (*Ph. t. acredula*) were identified by comparison with skins. Unusually small passage in September, the largest number at any one time being 6 on September 30th.

LESSER WHITETHROAT (*Sylvia curruca*).

A bird of the Siberian race (*S. c. blythi*) was trapped on October 12th and remained till the 17th.

WOOD WARBLER (*Phylloscopus sibilatrix*).

Singly on May 2nd, 3rd and 5th and 4 birds (an unusual number for Fair Isle) on the 6th.

TREE PIPIT (*Anthus trivialis*).

A few appeared at the beginning of May, after which there was an immense rush on the 6th estimated at some 500 birds. These dropped away considerably on 7th-8th, but at least 100 remained until the 11th, and 50 or so on the 14th.

PETCHIORA PIPIT (*Anthus gustavi*).

One that was first seen on October 16th flew into telephone wires on the 18th and was killed (for full details *vide antea*, pp. 211-212).

RED-THROATED PIPIT (*Anthus cervinus*).

One seen on May 31st (for full details *vide antea*, p. 212).

GREY-HEADED WAGTAIL (*Motacilla flava thunbergi*).

A male of this race was identified on May 5th.

WAXWING (*Bombycilla garrulus*).

One on Houll Hill on November 15th.

GREAT GREY SHRIKE (*Lanius excubitor*).

One on October 12th and 13th was perhaps the same bird as that which was trapped twice on the 14th. One on October 17th.

REDPOLL (*Carduelis flammea*).

Birds of the Greenland race (*C. f. rostrata*) were much in evidence in the autumn of 1952. The first was watched on Bunes between September 7th and 9th, feeding on the seeding heads of *Plantago maritima* and *coronopus*. There were two birds on the 12th and another on the 15th, then two more on the 21st and one on the 27th. A single bird on October 5th was succeeded by 5 on October 6th, two remaining on the 7th. During the week from October 10th there were 3 or 4 birds each day: at this time they were to be seen mostly on the oat-stooks, in the stubble, or in the Busta cabbages.

A few Mealy Redpolls (*C. f. flammea*) were also present from September 30th to October 10th.

SCARLET GROSBEAK (*Carpodacus erythrinus*).

One from September 10th to 14th. Two on October 3rd and one on the 4th, busy on oat-stooks. One on October 16th.

ORTOLAN BUNTING (*Emberiza hortulana*).

Two males on May 4th were followed by several on the 5th, and there were at least 15 by the 6th. They remained at this strength till May 9th, dropping to 5 by 11th-12th and to one only on the next three days. There were two males on May 21st, and one on the 26th. Only one female was seen—on May 8th-9th. One in company with a Lapland Bunting (*Calcarius lapponicus*) on August 31st and September 1st.

LITTLE BUNTING (*Emberiza pusilla*).

One on April 14th. One on October 11th (the first autumn record since 1948).

REED BUNTING (*Emberiza schoeniclus*).

A few were about at the beginning of May and these increased to over 10 on the 5th and to more than 30 on the 6th. They remained common until the

11th, after which the numbers dropped to only a few again. Thus the numbers rose and fell at the same time as did the Ortolan Buntings, but unlike the latter most of the Reed Buntings were females. Small autumn passage.

LAPLAND BUNTING (*Calcarius lapponicus*).

The autumn migration of this species followed the customary pattern. The first was heard on August 27th, and the first real movement was of 7 birds on September 4th, increasing to 13 by the 6th. About 6 were seen daily from then on, when it seemed that only one or two remained (but numbers difficult to assess after first arrival). 3 on September 20th-21st may have been new; one on September 29th succeeded by 5 next day almost certainly were. 3 more appeared on October 5th and there were 4 on the 7th. One or two only remained after this date.

THE ISLE OF MAY BIRD OBSERVATORY, 1952.

BY

A. G. S. BRYSON.

VOLUNTARY observers again compiled an interesting record of the spring and autumn migrations. A Heligoland trap was built in a gully in the rocks near the harbour during the summer, this being the fourth such trap on the island. The following are among the more unusual records in 1952:

LITTLE AUK (*Alle alle*).

One, March 9th.

NIGHTJAR (*Caprimulgus europæus*).

One, July 28th.

GREAT TIT (*Parus major*).

One, October 24th to November 3rd. Previous records of Great Tits on the island are: Two, April 11th, 1947, and one, October 15th, 1910.

BLACK REDSTART (*Phœnicurus ochrurus*).

One, March 20th; one, April 16th and 17th; two, April 18th; one, April 27th; three, October 13th; odd records until October 26th.

NIGHTINGALE (*Luscinia megarhyncha*).

One, May 16th to 22nd.

BARRED WARBLER (*Sylvia nisoria*).

One, August 8th to 9th.

WILLOW WARBLER (*Phylloscopus trochilus*).

Over 500 on May 5th.

GREAT GREY SHRIKE (*Lanius excubitor*).

One, October 17th to 24th (two on 22nd).

SCARLET GROSBEEK (*Carpodacus erythrinus*).

One, September 7th.

ORTOLAN BUNTING (*Emberiza hortulana*).

One, May 2nd; one, June 1st; one, October 24th.

LAPLAND BUNTING (*Calcarius lapponicus*).

One, September 29th to October 5th; one, October 23rd.

MONKS' HOUSE BIRD OBSERVATORY, 1952.

BY

DR. E. A. R. ENNION.

FOUR Bird Courses and a number of others were held at Monks' House during 1952. About 500 visitors all told stayed with us, including many B.T.O. and B.O.U. members attending the joint British Ornithological Conference at Bamburgh at the end of June, several of whom stayed on afterwards; as did also several members of the Observatories Committee which met at Monks' House at the end of October. We were also very pleased to welcome many members of the S.O.C. at various times and 20 members of B.E.N.A. whose annual Field Week was held here at Whitsun.

Spring passage in 1952 proved less productive than in 1951. Under the prevailing fair weather conditions many migrants flew on inland rather than turn up the coast or remain to recuperate in the coastal belt. We had several interesting recoveries however from the beach traps, a "battery" of six of which are now installed and working very well. Both Rock and Meadow Pipits (*Anthus spinoletta* and *pratensis*) were recovered, ringed originally on spring passage in the previous year; and a Sedge Warbler (*Acrocephalus schænobæus*) ringed as an adult on May 21st, 1951, was caught in the same ditch on June 1st, 1952. A Goshawk (*Accipiter gentilis*) was seen on May 16th and a Green-winged Teal drake (*Anas crecca carolinensis*) remained for 10 days from April 10th.

During the summer about 1,000 nestlings of 43 species were ringed, including *ca.* 80 Meadow Pipits from the dunes near the Observatory; 75 Rooks (*Corvus frugilegus*) from two rookeries; 50 Whinchats (*Saxicola rubetra*) from a single Cheviot valley; 50 Rock Pipits from the Farnes; and 30 Reed Buntings (*Emberiza schæniclus*), out of a total of 74 of these nestlings, from one small marsh—i.e. the whole "crop" of certain species from certain circumscribed breeding sites. Similarly from a one-mile stretch of one of the lower Cheviot valleys, an attempt was made to analyse the breeding success of *ca.* 180 nests of 22 species, including 42 Linnets' nests (*Carduelis cannabina*). Altogether 273 nestlings were ringed from this valley out of 500-plus hatched.

Autumn passage again brought a number of recoveries of birds ringed on passage in the previous autumn: Rock and Meadow Pipits; Robin (*Erithacus rubecula*); and also Wheatear (*Oenanthe œnanthe*) of which one ringed as a passage juvenile on July 24th, 1951, was recaptured on August 18th, 1952, and another ringed as a nestling on Cheviot on June 6th, 1952, was caught and released between Bayonne and Biarritz on August 24th. A Lesser Grey Shrike (*Lanius minor*) was caught at the Observatory on September 14th and recovered in Aberdeen on October 16th (*vide antea*, p. 220); a Great Grey Shrike (*L. excubitor*) was present on

October 19th. A total of about 3,000 birds had been ringed by the end of October.

The busiest period by far of the trapping during the winter 1952/53 was during February after the initial gales had washed up vast quantities of the seeds of Sea Rocket (*Cakile maritima*) and sandhoppers (*Talitrus* spp. mainly) around high water mark. Starlings (*Sturnus vulgaris*) soon discovered the latter and Greenfinches (*Chloris chloris*) the former. Large numbers of Greenfinches were caught, individual (and often single-handed or with the two of us—Mrs. Ennion and myself) drives of the Heligoland trap resulting at various times in "bags" of 77, 64, 54, 41 and eight between 25 and 15, with very few re-traps until towards the end of the period. Our wader trapping improved also, 20 adults of 6 species having been caught during the year. The current Report and the "Arrangements" leaflet for 1954 may be obtained from the Director, Dr. E. A. R. Ennion, Monks' House Bird Observatory, Seahouses, Northumberland.

SPURN BIRD OBSERVATORY, 1952.

BY

G. H. AINSWORTH AND R. CHISLETT.

DURING its seventh year the observatory continued to be manned entirely by amateurs, and the scheme for voluntary wardens-in-charge worked well. The periods from April 4th to May 28th, and from July 26th to November 6th, were covered continuously. Under the auspices of the R.S.P.B., two courses were held in consecutive weeks of August for members of the Junior Bird Recorder's Club, directed by G. R. Edwards.

Birds ringed numbered 2682, covering 69 species out of the total of 160 species recorded for the peninsula for the year. No great rush of migrants was concentrated into one period as happened in 1951, rather was passage spread more evenly, probably in accord with different weather conditions over Scandinavia.

One of a flock of Snow Buntings (*Plectrophenax nivalis*) seen on December 30th, 1952 carried a yellow ring on its left leg and an aluminium ring on its right leg; two males were so ringed at Fair Isle on October 20th and November 29th, 1950. Birds caught and ringed included a Corncrake (*Crex crex*) on September 9th, a Hoopoe (*Upupa epops*) on September 9th (another was watched at leisure on September 23rd), a Great Spotted Woodpecker (*Dendrocopus major*) on September 30 of which the race appeared to be indeterminable, a Bluethroat (*Luscinia svecica*) on September 15th, Barred Warblers (*Sylvia nisoria*) on October 2nd and 3rd, a Yellow-browed Warbler (*Phylloscopus inornatus*) on September 29th, a Red-breasted Flycatcher (*Muscicapa parva*) on October 20th, a Great Grey Shrike (*Lanius excubitor*) on October 14th and a Woodchat Shrike (*L. senator*) on May 13th.

The drift of Leach's Petrels (*Oceanodroma leucorhoa*) extended to Spurn, one occurred on October 13th, and two were watched close inshore as they rode the westerly gale on October 29th and pattered between waves. Other unusual species seen included a Great Shearwater (*Puffinus gravis*) on August 10th and a Pectoral Sandpiper (*Calidris melanotos*) on October 10th.

Many more details are contained in the *Yorkshire Ornithological Report* for 1952 copies of which can be obtained (price 2s.) from either of the writers.

GIBRALTAR POINT BIRD OBSERVATORY, 1952.

BY

A. E. SMITH AND R. K. CORNWALLIS.

THE Observatory is fortunate in being situated in a splendid nature reserve of more than 500 acres of sand dunes and salt marshes. The greater part of this was formally established in August, 1952, when the Lindsey County Council, which owns the property, became the first local authority in England to make a nature reserve declaration under sections 19 and 21 of the National Parks and Access to the Countryside Act (1949). Later in the year the Council purchased another 70 acres of land to add to the reserve. More recently (June, 1953) the Skegness Urban District Council has resolved to make a similar declaration in respect of an important and extensive dune area adjoining the present reserve on the north. By agreement with the above authorities the reserve is managed by the Lincolnshire Naturalists' Trust which receives for this purpose the generous advice and assistance of the University of Nottingham, the Nature Conservancy and other bodies. The Trust also maintains the Bird Observatory and Field Research Station in close association with the University.

In 1952 the Observatory was manned for only a short period in the spring, but there was continuous observation and trapping from the fourth week of July to the second week of November. 148 species were seen during the year and 1,675 birds of 60 species were ringed. 32 ornithologists and about 25 other students and research workers, engaged in various zoological, botanical and geographical studies, stayed at the Observatory and Field Station. The collaboration of the Leicestershire and Rutland Ornithological Society in manning the Observatory proved of the greatest value.

By the fourth week of July, when continuous autumn observation began, large numbers of waders and terns were present. There was particularly interesting Passerine migration between August 10th and 14th, culminating in a big movement of Willow Warblers (*Phylloscopus trochilus*) and Whitethroats (*Sylvia communis*) on 14th. Apart from considerable movements of Swallows (*Hirundo rustica*) during periods of south-westerly winds in the fourth week, Passerine migration during the rest of August was

not on a large scale. From September 4th to 16th winds were predominantly north-easterly and there was an influx of "drift" migrants on 9th and 10th. These were mainly Pied Flycatchers (*Muscicapa hypoleuca*), Goldcrests (*Regulus regulus*), Redstarts (*Phoenicurus phoenicurus*) and Robins (*Erithacus rubecula*), but there was also a Red-backed Shrike (*Lanius collurio*), a Lesser Whitethroat (*Sylvia curruca*) of the Siberian race and a Bluethroat (*Luscinia svecica*), all on September 10th. During the second half of September weather was mainly south-westerly and there was strong coastal movement of Starlings (*Sturnus vulgaris*), Greenfinches (*Chloris chloris*), Linnets (*Carduelis cannabina*), Redpolls (*C. flammea*), Reed and Yellow Buntings (*Emberiza schœniclus* and *citrinella*), House and Tree Sparrows (*Passer domesticus* and *montanus*), Skylarks (*Alanda arvensis*), Meadow Pipits (*Anthus pratensis*), Pied Wagtails (*Motacilla alba*), Blue and Great Tits (*Parus cœruleus* and *major*), Swallows and House Martins (*Delichon urbica*). From September 30th to October 4th pressure was high over Scandinavia and winds were north-easterly. There was considerable immigration throughout the period. Redwings (*Turdus musicus*), Song Thrushes (*T. ericetorum*) and Robins (all the birds of the last two species which were examined appeared to be of the Continental race) were most numerous, but Bramblings (*Fringilla montifringilla*), Pied Flycatchers, Blackcaps (*Sylvia atricapilla*), Fieldfares (*T. pilaris*), Ring Ousels (*T. torquatus*) and Redstarts occurred in smaller numbers. On October 1st there was a Yellow-browed Warbler (*Phylloscopus inornatus*) and a Jack Snipe (*Lymnocyptes minimus*) and on 3rd a Red-breasted Flycatcher (*Muscicapa parva*). On 4th there was a big immigration of Lapwings (*Vanellus vanellus*) on a broad front over the Lincolnshire coast. After that a depression moving north up the North Sea brought a return to south-westerly conditions and so a renewal of diurnal coastal movement. The Croft Marsh flock of Pink-footed Geese (*Anser fabalis brachyrhynchus*), which had begun to assemble in the last week of September, had reached full strength by the middle of October. During this month and the first ten days of November there were several large influxes of Blackbirds (*T. merula*), probably normal winter immigrants to Britain rather than accidental "drift" migrants. One of these, trapped on November 1st, had been ringed eight days before in south-west Norway.

The following records may be of particular interest:

LITTLE RINGED PLOVER (*Charadrius dubius*).

One by a brackish pool on June 16th.

WRYNECK (*Jynx torquilla*).

One trapped on September 5th, the first record for the Point.

WOODLARK (*Lullula arborea*).

One on October 14th, three on November 30th and one on December 14th. It seems to be occurring in spring and autumn with increasing regularity.

SHORE LARK (*Eremophila alpestris*).

Single birds on October 5th and November 9th.

WILLOW TIT (*Parus atricapillus*).

One trapped on June 24th and another on July 8th. One or two occur almost every year in late June or July.

RING OUZEL (*Turdus torquatus*).

There were several between September 12th and 15th, but the main movement occurred, as last year, between September 30th and October 3rd when there was a peak of 30 on 2nd and five to ten on other days. The species was more numerous than in previous autumns since 1949.

BLACK REDSTART (*Phœnicurus ochrurus*).

Single birds on April 11th and October 14th.

BLUETHROAT (*Luscinia svecica*).

One of an indeterminate race trapped on September 10th.

ICTERINE WARBLER (*Hippolais icterina*).

One was trapped on August 10th.

BARRED WARBLER (*Sylvia nisoria*).

A juvenile was trapped on August 23rd. One (probably the same) was seen on August 25th and 26th.

WOOD WARBLER (*Phylloscopus sibilatrix*).

One trapped on August 13th. It is a rare migrant at the Point and had not occurred since 1949.

YELLOW-BROWED WARBLER (*Phylloscopus inornatus*).

One trapped on September 20th. A ringed bird, which was presumably the same one, was present on the following three days and was watched taking insects on the wing. Another was trapped on October 1st.

FIRECREST (*Regulus ignicapillus*).

An adult male was trapped on April 9th. The white superciliary stripe and dark band through the eye distinguished the bird in the field, and in the hand a detailed description and measurements were taken and sketches made. It was alone and very skulking in behaviour. It was the first record for Gibraltar Point and the fourth for Lincolnshire.

RED-BREASTED FLYCATCHER (*Muscicapa parva*).

One in the trapping hollow on October 3rd clearly identified by Dr. K. B. Rooke by the characteristic tail pattern.

GREY WAGTAIL (*Motacilla cinerea*).

Up to four on six days between September 11th and 29th. Though still scarce, it has become steadily more numerous on autumn passage since 1949.

No mention has been made in this report of recoveries of birds ringed at the Observatory since these are published in the annual report of the Bird-Ringing Committee.

A fuller account of the year's work, including a map of selected ringing recoveries and progress reports on other zoological, botanical and geographical studies, may be found in the 1952 Report of the Gibraltar Point Bird Observatory and Field Research Station which is published by the Lincolnshire Naturalists' Trust at 2s. 6d. Reports for 1951 (2s. 6d.) and 1950 (1s. 6d.) are still available. All these are obtainable from R. K. Cornwallis at Bleasby Grange, Legsby, Market Rasen, Lincs., to whom enquiries concerning records and research should also be addressed. Enquiries about accommodation and general correspondence should be sent to A. E. Smith at 51, West Street, Alford, Lincs.

CLEY BIRD OBSERVATORY, 1952.

BY

R. A. RICHARDSON.

OCTOBER 31st, 1952, saw the end of the Observatory's third year during which four "Heligoland" traps were working and 1,466 birds of 71 species were ringed (1,144 trapped, 322 nestlings). The more unusual captures included Grey Phalarope (*Phalaropus fulicarius*), Barred Warbler (*Sylvia nisoria*), Wryneck (*Jynx torquilla*), Long-eared Owl (*Asio otus*), Corn Bunting (*Emberiza calandra*) and Black Redstart (*Phœnicurus ochrurus*). Among recoveries reported were three Robins (*Erithacus rubecula*) from Spain, Minorca and Germany respectively, a Linnet (*Carduelis cannabina*) from the Atlantic coast of France and several Meadow Pipits (*Anthus pratensis*) and Whitethroats (*Sylvia communis*) ringed in earlier seasons were re-trapped at Cley. A German-ringed White-throat was also trapped at the end of June and was probably a local breeder.

210 full species were recorded within the Observatory area during the year and the "rarity list" which follows is more impressive than in any previous year. Several visitors took advantage of the sleeping accommodation and cooking facilities offered at the Observatory and helped to maintain the daily recording of migration in relation to the weather from March to October inclusive.

The following notes are compiled from this source and incorporate observations by reliable ornithologists visiting the district.

A brief account of the year's activities with a description of the traps and a list of birds ringed and recovered appears in *Wild Bird Protection in Norfolk, 1952* (2s. 6d.) obtainable from the Secretary, Norfolk Naturalists' Trust, Assembly House, Norwich.

All enquiries regarding the Observatory should be addressed to the Warden, R. A. Richardson, Hill-Top, Cley, Holt, Norfolk, and should be accompanied by a stamped reply envelope, but no more bookings can be accepted until April, 1954.

LEACH'S PETREL (*Oceanodroma leucorhoa*).

One, possibly two, off the beach, October 14th.

STORM PETREL (*Hydrobates pelagicus*).

One dead on the beach, November 8th.

LITTLE EGRET (*Egretta garzetta*).

An adult on the grazing-marshes from May 7th-11th (*antea*, p. 256).

LITTLE BITTERN (*Ixobrychus minutus*).

A female in the reed-beds from July 26th-November 6th (see page 450).

SPOONBILL (*Platalea leucorodia*).

An immature, September 15th.

GLOSSY IBIS (*Plegadis falcinellus*).

One mobbed by Black-headed Gulls (*Larus ridibundus*), September 24th.

GOSHAWK (*Accipiter gentilis*).

An adult flew in from the sea, June 29th.

OSPREY (*Pandion haliaetus*).

Single birds on May 3rd, August 29th and 31st.

SPOTTED CRAKE (*Porzana porzana*).

1 or 2 seen repeatedly between August 14th and September 4th.

LITTLE RINGED PLOVER (*Charadrius dubius*).

A juvenile, August 7th-8th, one on the 24th, and another September 30th.

KENTISH PLOVER (*Charadrius alexandrinus*).

A ♂ and ♀, April 13th.

DOTTEREL (*Eudromias morinellus*).

An immature frequented a rabbit-warren between August 9th and 15th.

PECTORAL SANDPIPER (*Calidris melanotos*).

One from August 29th-September 5th, an unusually shy and unapproachable individual.

BROAD-BILLED SANDPIPER (*Limicola falcinellus*).

One on June 5th (*antea*, vol. xlv, p. 426).

AVOCET (*Recurvirostra avosetta*).

Single birds on April 22nd and June 6th. 2 from May 3rd-4th one of which was watched tossing grasses over its shoulder while it made a nest-scraper. A party of 5 on July 26th included some fully-fledged juveniles.

GREY PHALAROPE (*Phalaropus fulicarius*).

Immature birds recorded as follows: 1, October 4th-9th (ringed on the 5th); 1, November 7th-13th (ringed on the 7th); 1, November 12th-21st.

RED-NECKED PHALAROPE (*Phalaropus lobatus*).

A ♀ in breeding plumage, June 21st-22nd. 2 immatures between August 26th and September 6th.

LITTLE AUK (*Alle alle*).

Single birds flying along the surf, November 8th and 30th.

WRYNECK (*Jynx torquilla*).

An immature ringed August 15th. 1-2, August 22nd-23rd. 1, September 7th.

SHORE LARK (*Eremophila alpestris*).

Spring passage: ca. 25 on Salicornia flats and arable by the beach from mid February (with 30 on April 8th) gradually dwindling during first half of May till the last one left on May 17th. Autumn birds were two occasionally during latter half of October, and 1 November 2nd.

RED-RUMPED SWALLOW (*Hirundo daurica*).

One from March 6th-25th (*antea*, pp. 263-264).

BLUETHROAT (*Luscinia svecica*).

Maximum of 6 between September 10th and 17th. One on October 1st.

GRASSHOPPER WARBLER (*Locustella naevia*).

One, ringed on April 11th, remained till 12th. An early date.

BARRED WARBLER (*Sylvia nisoria*).

An immature frequented thorn- and elder-brakes from September 15th-28th, and was ringed on the 17th.

WILLOW WARBLER (*Phylloscopus trochilus*).

A bird of the Northern race (*ph. t. acredula*) ringed on May 11th.

RED-BREASTED FLYCATCHER (*Muscicapa parva*).

A ♀ or immature, September 16th and 18th.

GREY-HEADED WAGTAIL (*Motacilla f. thunbergi*).

A ♂ on May 19th.

GREAT GREY SHRIKE (*Lanius excubitor*).

One arrived from the sea, September 10th and remained till the 11th.

LAPLAND BUNTING (*Calcarius lapponicus*).

Spring passage: 1 flying west along shore, March 5th, and a ♀ feeding with Shore Larks on a barley field behind the beach, May 11th. First autumn record, an immature on East Bank, September 2nd. Up to 7 on arable land by the sea from mid September till the end of the year with 10 on September 16th and November 2nd.

GREAT SALTEE, 1952.

BY

ROBERT F. RUTTLEDGE.

THE island was manned from April 1st to May 17th and from August 3rd to October 4th.

The following is a résumé of local weather conditions.

APRIL—For the most part winds were moderate and southerly until 25th, but were N.E. to S.E. from 12th to 18th. From 26th the wind was light S.E. increasing to strong on 29th and 30th.

MAY—The month commenced with easterly breezes; a gale on 9th was followed by light easterly winds until 17th. At the end of April and early in May days were hazy. There was some morning drizzle or fog on May 3rd and 4th; fog on 14th and 15th. Weather was brilliant with distant haze from May 5th to 17th.

AUGUST—Up to the 14th chiefly westerly winds; gales on 10th and 12th. An E.S.E. gale on 18th terminated a period of easterly weather; westerlies followed. Fog on 25th, 29th and 30th.

SEPTEMBER—The month opened with fresh westerly winds; from 5th to 19th winds were easterly. Westerly type weather prevailed until 29th.

There were gales on 24th and 30th. Days and nights were, generally, bright and clear. There was drizzle in the night of 21st and rain on 24th. Visibility varied from good to excellent.

OCTOBER—Moderate to fresh N.W. wind was succeeded on 3rd and 4th by winds from N.E. to S.E. Bright nights with moon nearing full.

The following list is necessarily selective. Observations in greater detail are published in *Fair Isle Bird Obs. Bull.*, No. 7, 1952 and No. 9, 1953.

GOLDEN PLOVER (*Charadrius apricarius*).

One on May 9th and 10th showed the characters of the Northern race (*Ch. a. altifrons*); a second similar bird arrived on 11th. Both left during fog on 15th.

DOTTEREL (*Eudromias morinellus*).

One on April 17th.

WHIMBREL (*Numenius phaeopus*).

One on April 4th. Regular passage daily from April 20th to May 9th, reaching a peak on May 4th (140). Movement on May 4th took place in fog and most birds were flying east.

SPOTTED REDSHANK (*Tringa erythropus*).

One on September 7th.

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

On April 1st there were only two at the breeding site, on 2nd 4, on 3rd 27, then a slow increase to 40 on 21st. Passage from September 10th to 20th and on 22nd and 24th.

BLACK TERN (*Chlidonias niger*).

One on August 21st.

TURTLE DOVE (*Streptopelia turtur*).

8 on May 15th; over 12 on 16th; three on 17th. Single birds irregularly from August 24th to September 25th.

SWIFT (*Apus apus*).

Peak on May 10th (10). One to four on most days from August 3rd to 15th; one on September 8th.

WRYNECK (*Jynx torquilla*).

One ringed on April 29th was present on 30th. The tenth Irish record and the second in spring.

SKYLARK (*Alauda arvensis*).

No migration until September 14th; movement spasmodic until 29th, after which small numbers were migrating from S.E. to N.E. or N.

HIRUNDINES.

The pattern of migration in spring was much as in 1951 (*antea*, vol. xlv, p. 305). Swallows (*Hirundo rustica*) were migrating on all but two days from August 5th to October 4th. On September 12th and 14th maximum numbers were reached (1,500 each day). From August 16th to September 14th movement was, with few exceptions, to N.E. (*cf. antea*, vol. xlv, p. 305), birds having arrived from S.W. Later movements were more confusing. From September 27th to October 1st the majority were juveniles.

Movement of House Martins (*Delichon urbica*) was slight. Sand Martins (*Riparia riparia*) reached a peak on September 11th: from August 26th to September 4th they were moving west, thereafter N.E. or north.

RED-RUMPED SWALLOW (*Hirundo daurica*).

One, the first Irish record, on April 10th and 11th (*vide antea*, p. 265).

CARRION CROW (*Corvus corone*).

4 of these birds, so uncommon in Ireland, were fully identified on April 6th.

RING OUZEL (*Turdus torquatus*).

Movement in mid-April, reaching a peak on 17th (over 5). Two on August 3rd, singly on 30th and September 22nd.

REDSTART (*Phœnicurus phœnicurus*).

Single males April 9th, 18th and 30th, May 1st and 9th. Three males, April 17th. Females singly April 28th, May 6th and 17th.

ROBIN (*Erithacus rubecula*).

Small fluctuating numbers from August 19th to the end of September. Ten on October 1st, about fifteen daily from 2nd to 4th.

WHITETHROAT (*Sylvia communis*).

Main passage commenced on April 27th; peak on 30th (150). Almost daily in small numbers, August 4th to September 19th.

LESSER WHITETHROAT (*Sylvia curruca*).

One ringed, May 4th.

WILLOW WARBLER (*Phylloscopus trochilus*).

Main passage on April 9th (400); 15th (200); 24th and 25th (100 each day). There was further evidence of passage, in very small numbers, of birds with affinities to the Northern race (*Ph. t. acredula*) (see *antea*, vol. xlv, p. 303) between April 30th and May 15th.

GREENISH WARBLER (*Phylloscopus trochiloides*).

One, August 25th (see p. 456). The first recorded in Ireland.

CHIFFCHAFF (*Phylloscopus collybita*).

Daily April 5th to 18th, reaching a peak on 9th (200). Autumn movement commenced on August 26th; heaviest passage in mid-September.

WOOD WARBLER (*Phylloscopus sibilatrix*).

One was clearly identified on August 20th.

YELLOW-BROWED WARBLER (*Phylloscopus inornatus*).

One, clearly identified, on August 6th. The second Irish record. Full details of characteristics noted are recorded in the observatory note books.

PIED FLYCATCHER (*Muscicapa hypoleuca*).

Singly, September 4th, 16th, October 4th.

RED-BREASTED FLYCATCHER (*Muscicapa parva*).

An adult female was ringed on September 17th. The eighth Irish record.

MEADOW PIPIT (*Anthus pratensis*).

Movement in very small numbers up to April 13th. On April 3rd a flock of 13 left the island, flying N.W. In autumn migration was on a far greater scale than in 1951 and was first noticed on August 5th. Intense movement took place from September 8th to 16th. Heavy migration was renewed on 22nd and continued until the island was vacated on October 4th. Peaks were September 16th (200), 23rd (200), 27th (over 500), 29th (650), October 2nd and 3rd (600 each day). On the days of heaviest migration after September 22nd arrivals were from the N.E. and departures to W. or S.W. On September 30th, October 2nd and 4th the course taken was approximately south to north-east. Movement almost invariably commenced about sunrise, reached a peak half an hour to an hour later and normally ceased between 10.00 and 11.00 hrs, G.M.T.

TREE PIPIT (*Anthus trivialis*).

One, possibly two, April 17th; the first record for spring on the Irish coast. Singly from mid-August on eight days and on September 4th and 6th. In each case the call note was heard by observers familiar with the bird.

ROCK PIPIT (*Anthus spinoletta*).

Extensive colour-ringing proved that there was considerable movement in progress during the second half of September; but whether of emigrants, immigrants, or birds on passage remains to be discovered.

WHITE WAGTAIL (*Motacilla alba*).

Birds subspecifically identified as *M. a. alba* were seen on April 18th (1) and daily from August 22nd to September 14th. Peak on September 4th (over 45). Most arrivals were from N.E. and departures to S.W., but on September 5th and 6th movement was to N.E.

YELLOW WAGTAIL (*Motacilla flava*).

One, August 26th was *flavissima*. *Flava* wagtails appeared singly on five days between August 21st and September 3rd.

RED-BACKED SHRIKE (*Lanius collurio*).

An adult female, the eighth recorded in Ireland and the first in spring, was ringed on May 15th.

LINNET (*Carduelis cannabina*).

Intermittent passage of very small numbers from April 3rd to May 1st. Singly May 6th and 17th. Intermittent movement from mid-September, reaching a peak on 27th (70). Marked movement October 2nd to 4th, reaching a peak on 3rd (150). At Carnsore Point on the mainland N.E. of Saltee there was a huge build-up on October 5th followed by departure to the S.E.

REDPOLL (*Carduelis flammea*).

A female of the Lesser race (*C. f. cabaret*) was ringed on May 4th. A Redpoll was also seen in flight on April 25th.

SKOKHOLM BIRD OBSERVATORY, 1952.

BY

P. J. CONDER.

THIS note is drawn from the *Skokholm Bird Observatory Report* for 1952 which is compiled by the Council for the Promotion of Field Studies and published by the West Wales Field Society and obtainable from the Hon. Secretary, The Red House, Heywood Lane, Tenby, Pems.

The weather in 1952 was generally rather warmer than in 1951 and, in particular, April and May were on the average 2° F. warmer than in 1951. This perhaps resulted in the earlier completion of migration. July and August were both about 2° F warmer than average but September was 2° F colder. Very little strong wind was recorded throughout the season.

The following notes deal with the more unusual species:

CANADA GOOSE (*Branta canadensis*).

Four on October 3rd. First record for the island.

GOLDEN PLOVER (*Charadrius apricarius*).

One on May 15th and 16th showed the characters of the Northern race (*C. a. altifrons*).

HOOPOE (*Upupa epops*).

One from April 18th to 22nd.

SHORT-TOED LARK (*Calandrella brachydactyla*).

One seen between April 9th and 13th. First record for Wales (*vide antea*, pp. 189-190).

BLUE TIT (*Parus caeruleus*).

One on October 9th. Third record of this species.

LESSER WHITETHROAT (*Sylvia curruca*).

One on April 30th.

FIRECREST (*Regulus ignicapillus*).

A male on October 11th, and a male and female on October 13th. Only one previous record.

LAPLAND BUNTING (*Calcarius lapponicus*).

A bird in first winter plumage seen between September 4th and 6th. Fourth record.

HOUSE SPARROW (*Passer domesticus*).

One on May 20th. Fifth record.

TREE SPARROW (*Passer montanus*).

One on October 7th and 9th. Fifth and sixth records for the island.

LUNDY BIRD OBSERVATORY, 1952.

BY

PETER DAVIS.

THE following are among the rarer species recorded on the island during the year:

LITTLE CRAKE (*Porzana parva*).

An adult male in the Millcombe gardens, September 12th to 14th. First record for the island.

RED-RUMPED SWALLOW (*Hirundo daurica*).

One March 27th. Another new record (*vide antea*, pp. 264-265).

GOLDEN ORIOLE (*Oriolus oriolus*).

A female in the Millcombe woods, June 5th to 7th.

CHOUGH (*Pyrhcorax pyrrhcorax*).

One February 20th to March 3rd.

AMERICAN ROBIN (*Turdus migratorius*).

A first-winter bird October 27th (probably 25th) to November 8th, caught in the Terrace trap on October 27th. (For full details, *vide antea*, pp. 364-368).

WHITE'S THRUSH (*Turdus dauma*).

One in Millcombe October 15th to November 8th. First definite occurrence on Lundy (see page 455).

FIRECREST (*Regulus ignicapillus*).

Seven or eight seen. A first-winter bird caught on the Terrace, October 12th, another caught in the Stonycroft garden on the 13th. The second was released in Millcombe and seen again 14th and 15th. A third first-winter bird and an adult were taken in the Terrace trap on the 14th. On November 5th two unringed adults seen on the Terrace, one later caught. An unringed first-winter bird seen in the same place November 9th to 11th, and one in Millcombe on the 15th. There are only two previous records.

WOODCHAT SHRIKE (*Lanius senator*).

A female May 5th, a first-winter bird August 21st. Second and third records.

SISKIN (*Carduelis spinus*).

A pair bred on the island, rearing three young.

[RED-HEADED BUNTING (*Emberiza bruniceps*).

An adult male August 15th to 21st; another October 2nd and 3rd.]

ORTOLAN BUNTING (*Emberiza hortulana*).

One August 28th.

LAPLAND BUNTING (*Calcarius lapponicus*).

One September 11th, and 13th, two 17th, one October 9th.

2,262 birds of 56 species were ringed during the year, two-thirds of them being trapped, including 300 adult sea-birds taken with hooks.

DUNGENESS BIRD OBSERVATORY, 1952.

BY

H. A. R. CAWKELL.

FORMED in the middle of 1952, Dungeness Bird Observatory operated during the autumn migration mainly on an experimental

basis. Although the one large Heligoland-type trap then in use was not completed until rather late in the period, between August 1st and December 31st 767 birds of 44 species were ringed and more than 145 species were recorded in the Observatory area.

Among the more interesting captures were two Lapland Buntings (*Calcarius lapponicus*), a Firecrest (*Regulus ignicapillus*), Ring Ouzel (*Turdus torquatus*), Bluethroat (*Luscinia svecica*), Wryneck (*Jynx torquilla*), Merlin (*Falco columbarius*) and Corn-crake (*Crex crex*), while two unexpected ones were a couple of Snipe (*Capella gallinago*) caught due to flooding of the trapping area towards the end of the year.

Starlings (*Sturnus vulgaris*) topped the ringing list with 221, but Whitethroats (*Sylvia communis*) came a close second (176), followed by Willow Warblers (*Phylloscopus trochilus*) (72) and Chiffchaffs (*Ph. collybita*) (67). Three of the Whitethroats have since been retrapped in 1953, one of them in the spring and in the autumn.

An interesting feature in regard to the leaf warblers was that the Willow Warblers moved through first, followed by the main body of the Chiffchaffs in mid-September.

The Lapland Buntings, caught on September 13th, were both males in moult. A Bluethroat was trapped the previous day and another was seen in the area three weeks later. Nine Nightingales (*Luscinia megarhyncha*) were caught between August 14th-19th.

Among birds seen in the Observatory area were Montagu's and Hen Harriers (*Circus pygargus* and *cyaneus*), Peregrine (*Falco peregrinus*), Woodcock (*Scolopax rusticola*), Red-necked Phalarope (*Phalaropus lobatus*), Great and Arctic Skuas (*Stercorarius skua* and *parasiticus*), Black Tern (*Chlidonias niger*), Black Redstart (*Phœnicurus ochruus*) and Great Grey Shrike (*Lanius excubitor*). But the main feature was the occurrence of parties of Little Gulls (*Larus minutus*) from early October to mid-November. They were mostly immatures.

The Observatory's records for 1952 are incorporated in the first annual Report of the Kent Ornithological Society.

The Observatory represents a joint effort on the part of the neighbouring counties of Kent and Sussex and the London Natural History Society. The L.N.H.S., the Hastings Natural History Society (which for many years included Dungeness in its area) and the Kent Ornithological Society are represented on the Observatory Committee by nominated members.

JERSEY BIRD OBSERVATORY, 1952.

BY

WILFRED D. HOOKE.

1952 was another year of active development and continuous records were maintained throughout. The following short notes refer to some of the more interesting birds seen in Jersey during

the year. Full details supporting the observations may be found in the observatory records.

RED-NECKED GREBE (*Podiceps griseigena*).

Two were repeatedly seen in St. Helier Harbour during February. The year was remarkable for the unusual numbers of both grebes and divers which frequented the harbour in the first three months.

CORMORANT (*Phalacrocorax carbo*).

A single bird seen fishing off the east coast of the island on March 20th showed the characteristics of the Southern race (*P. carbo sinensis*).

GARGANEY (*Anas querquedula*).

A pair successfully hatched six ducklings on St. Ouen's Pond. This is the first recorded breeding of Garganey in Jersey.

GREY PHALAROPE (*Phalaropus fulicarius*).

One at St. Ouen's Pond from October 5th until it was found dead on October 18th. Another was seen on the coast near by on October 30th and there are further records of Grey Phalaropes in St. Heliers Harbour from November 7th-11th and December 17th-18th.

BLACK GUILLEMOT (*Uria grylle*).

One off the north coast of the island on April 21st. This is a first record for Jersey.

HOODED CROW (*Corvus cornix*).

One on November 16th.

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

One male on April 13th with four Yellow Wagtails (*M. f. flavissima*). Two females on April 30th, in company with a female Yellow Wagtail.

BRAMBLING (*Fringilla montifringilla*).

The winter 1951-52 saw a considerable increase in the numbers of this bird visiting the island, flocks of up to 70 being present where two or three birds had previously been normal. The autumn of 1952 was even more remarkable as flocks of up to 400 birds were found in several localities.

In its first, full year the observatory ringed 1,343 birds of 62 species. The ringing of 92 Sedge Warblers (*Acrocephalus schoenobaenus*) during August revealed the existence of a much greater passage of this species through the Channel Islands than had previously been recorded.

STUDIES OF SOME SPECIES RARELY PHOTOGRAPHED.

LIII. TAWNY PIPIT.

Photographed by P. O. SWANBERG.

(Plates 68-71)

THE Tawny Pipit (*Anthus campestris*) is usually looked upon in Britain with greater interest than are the other rarer pipits. Possibly this is because it bred in Sussex on one or two occasions at the beginning of the present century or perhaps it is on account of its rather striking resemblance to the more dainty wagtails. Plate 70 gives some indication of this resemblance which is partly

due to the slimness of the bird in proportion to its size (coupled with its long tail which averages nearly half-an-inch longer than, for example, the Tree Pipit's (*A. trivialis*) and is responsible for much of the greater length) and partly due to its uniformly pale colouring. The upper-parts vary from a sandy-brown to a buffish-grey and are, including the crown, marked with broad striations which are, however, rather inconspicuous (plate 69). The lack of streaking on the under-parts can clearly be seen in plate 71 though this particular individual has more marks than some. The conspicuous, clean-cut, pale buff eye-stripe, broader and less curved than some illustrations suggest, is clear in all these plates, as is the way in which the median wing-coverts appear as light-edged, blackish diamonds forming in the field a darkish wing-bar (this is given added strength by the fairly uniform paleness of the mantle). Plate 71 in particular, but also plates 68 and 70, show the three prongs of darker colour that radiate from the base of the bill—out through the eye, across the cheek and on the side of the throat—producing a combination of brown and white that can be very striking in the field, the lower two causing the appearance of a moustache (*The Handbook*, vol. 1, pl. 19, gives little indication of these, but only in a small percentage of individuals are they inconspicuous). The full effect of another character of the Tawny Pipit, the rather long legs, is perhaps lost in every one of these photographs, but one can get some idea of it from plate 70. A further, oft-quoted (and perhaps over-emphasized) feature that is not very striking here is the more upright stance recalling the Richard's Pipit (*A. richardi*); in fact, however, the Tawny often moves with a horizontal carriage (thus helping the resemblance to the wagtails—a resemblance further increased if it flicks its tail up and down).

Usually an easy bird to identify (as far as pipits go) it is with the Richard's Pipit that the Tawny, particularly when in the more streaked juvenile plumage, is most likely to be confused, but the other species has even more noticeably long legs and is usually larger and less sandy-coloured, while their notes are quite distinct. Like a wagtail, the Tawny Pipit runs very swiftly and flies with markedly dipping, almost bounding, undulations. A denizen of sandy wastes, this pipit breeds typically in dunes and other similar places throughout much of Europe and central Asia extending to Mongolia; in Europe it breeds as far north as south Sweden (where P. O. Swanberg's excellent photographs were taken) and in view of the regularity with which it nests as close to Britain as northern France, Belgium and Holland, it is perhaps surprising that this bird is such a rare straggler to this country: for though not a few have been recorded in Sussex (particularly earlier in the century), the number elsewhere is very small and while several have now occurred in Scotland, the first Irish one was recorded only in 1953 (Gt. Saltee, Co. Wexford, May 11th, R. F. Ruttledge). I.J.F.-L.



TAWNY PIPIT (*Anthus campestris*).
SWEDEN.

(Photographed by P. O. SWANBERG).

The generally uniform colouring of this pale, inconspicuously marked pipit can be noted here, together with three of the more outstanding plumage features—the broad, pale buff eye-stripe, the moustachial streaks and the comparative darkness of the median wing-coverts (see pages 439-440).



TAWNY PIPIT (*Anthus campestris*).
SWEDEN.

(Photographed by P. O. SWANBERG).

This plate gives some idea of the greater length of the tail in proportion to the rest of the bird, and also of the inconspicuousness of the striations on the mantle. The fairly bulky nest is typically sited a



TAWNY PIPIT (*Anthus campestris*).

SWEDEN.

(*Photographed by P. O. SWANBERG*).

This photograph conveys better than the others the wagtail-like shape of this bird with its slim body and long tail ; it also gives an impression of the rather long legs. Note again the fairly uniform colouring (but the dark wing-coverts are very prominent here) and observe the unstreaked flanks.



TAWNY PIPIT (*Anthus campestris*).

SWEDEN.

(Photographed by P. O. SWANBERG).

The bird in this photograph is adopting to some extent the more upright stance characteristic of this species. The small amount of streaking on the breast and the complete lack of it on the flanks can clearly be seen; the pale buff eye-stripe, the brown monstachial streaks and the dark wing coverts are all very conspicuous. Note the size of the hind-claw which in length comes between those of the Tree and Meadow Pipits (*A. trichialis* and *pratensis*).

THE MIGRATIONS OF BRITISH WARBLERS (SYLVIIDÆ)
AS SHOWN BY THE RESULTS OF RINGING.*

BY

SIR A. LANDBOROUGH THOMSON, C.B., D.Sc.

THE purpose of this paper is to analyse the recovery records of birds of species of Sylviidæ ringed in the British Isles under the scheme now managed by the Bird-Ringing Committee of the British Trust for Ornithology and earlier by the late H. F. Witherby, Editor of *British Birds*. The number of records is so small, for all but two of the species, that it is for the most part a matter of summarizing rather than of analysing; but it seems to be convenient to bring together the records that have hitherto been published only in a scattered way in periodical lists over many years, and to take note of such other records as there are.

The number of birds ringed and recovered, of those species that have yielded any records at all, are as follows:

	Ringed to September 30th, 1952	Recoveries to September 30th, 1953	Percentage recovered
Reed Warbler	1,722	8	0.5
Sedge Warbler	2,865	26	0.9
Blackcap	1,785	6	0.3
Barred Warbler	26	2	—
Garden Warbler	1,940	7	0.4
Whitethroat	11,272	(143) 138	1.1
Lesser Whitethroat	935	17	1.8
Willow Warbler	21,352	(152) 124	0.6
Chiffchaff	2,526	(15) 14	0.5
Wood Warbler	1,634	7	0.4
Yellow-browed Warbler	23	1	—

The recovery figures shown in brackets are those counted before excluding certain records as non-viable, for reasons given later under the species concerned: the amended total is used in calculating the percentage. The results for the two species which have been ringed in numbers running into five figures suggest that the effective recovery rate to be expected in the case of warblers is of the order of from 6 to 11 in one thousand. The figures would, however, be much smaller if it were not for retrapping, often after only short intervals, at the places of ringing—Bird Observatories in particular.

Apart from the non-viable records just mentioned, some records included in the amended totals are of no special interest, the birds having been recovered at the places of ringing in circumstances which make absence of movement in no way remarkable, e.g. during the same breeding season, or, in the case of migrants, within a few days.

* A publication of the British Trust for Ornithology, the Bird-Ringing Committee of which is indebted to the Trustees of the British Museum (Natural History) for accommodation and to the Nature Conservancy for financial assistance.

The recovery records are summarised below species by species; conclusions are then drawn under general heads. In the summaries, the particulars of ringing are given on the left (without exact date in the case of birds stated to have been nestlings), and particulars of recovery on the right. Calendar years have been deliberately omitted in favour of "same year," "next year," "third year," etc. (relative to year of ringing, which is counted as the first), so that the essential point may meet the eye without calculation.

Reed Warbler (*Acrocephalus scirpaceus*).

Recovered in British Isles in year of ringing:

There are 3 records of recovery at the place of ringing; and 3 others of birds ringed as nestlings and recovered in August of the same year—near the place of ringing, 20 miles N., and 45 miles S.S.W., respectively.

Recovered in British Isles in a subsequent year:

Nestling; Lancashire. June 4th, next year; place of ringing.

Recovered abroad:

Nestling; Buckinghamshire. September, same year; Douro, Portugal.

Sedge Warbler (*Acrocephalus schoenobaenus*).

Recovered in British Isles in year of ringing:

There are 21 records of birds recovered later in the same summer, the only cases showing movement being as follows:

Nestling; near Anstruther, Fife. August 7th; Newport, Monmouthshire.
Nestling; Driffield, Yorkshire. August; Sidcup, Kent.
Nestling; Bedford. August 31st; Greenford, Middlesex.

These three birds had moved southwards, respectively 330 miles, 185 miles and 44 miles.

Recovered in British Isles in subsequent years:

Nestling; Buckinghamshire. May 9th, third year: "Royal Sovereign" Lightship, off Beachy Head, Sussex (killed by striking lantern).

Four other birds, not ringed as nestlings, were recovered at the places of ringing as follows: two in the next year; one later in the same year and again in the next year and in the third year; one in the fifth year.

Blackcap (*Sylvia atricapilla*).

Recovered in British Isles in year of ringing:

Four records of recovery at the place of ringing after a short interval, and the following:

October 25th (adult male); Fair Isle. November 6th, same year; South Ronaldshay, Orkney (75 miles, S.W.).

Recovered in British Isles in a subsequent year:

Nestling; Surrey.

June 17th, next year; Sussex (10 miles S. of place of ringing).

Barred Warbler (*Sylvia nisoria*).

The only 2 records are of birds caught in September on the Isle of May and recaptured there on the next day.

Garden Warbler (*Sylvia borin*).

Recovered in British Isles in year of ringing:

6 records of recovery at the place of ringing.

Recovered abroad:

Nestling; Cumberland.

September 9th, same year; Basses-Pyrénées, France.

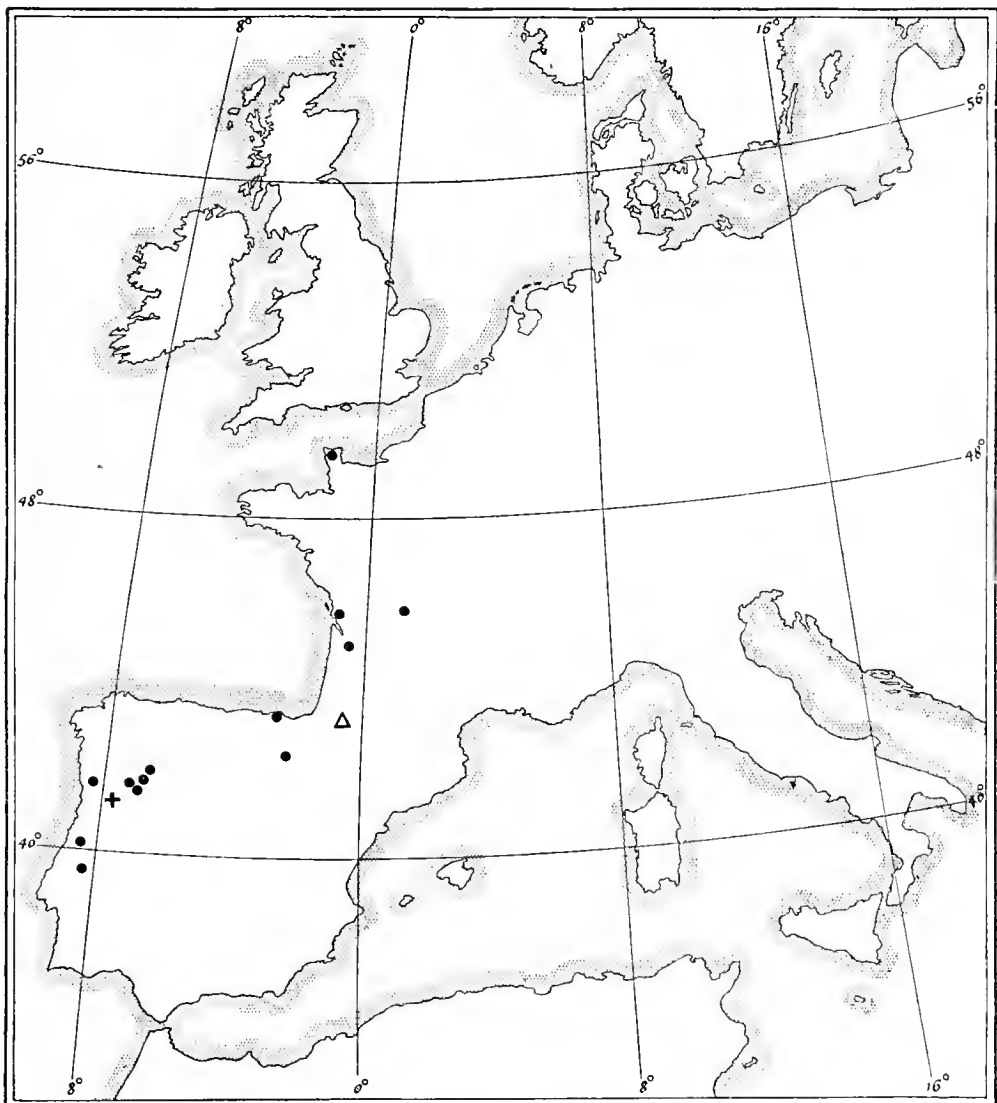


FIG. 1. RECOVERIES OF WARBLERS RINGED IN THE BRITISH ISLES.

● Whitethroat (*Sylvia communis*); ▲ Garden Warbler (*S. borin*);
+ Reed Warbler (*Acrocephalus scirpaceus*).

Whitethroat (*Sylvia communis*).

From the gross total, 5 records must be excluded (nestlings that had not flown).

Recovered in British Isles in year of ringing:

89 recoveries at the places of ringing, and the following:

May 3rd; Skokholm, Pembrokeshire.	May 22nd, same year; Cheddar, Somerset (100 miles E.S.E.).
May 5th; Lundy I., Bristol Channel.	July 24th, same year; Listowel, Co. Kerry, Ireland.
May 1st; Dungeness, Kent.	June 21st, same year; Isle of Sheppey, Kent (36 miles N.N.W.).

Recovered in the British Isles in subsequent years:

There are 23 records of recovery at the place of ringing in the second year (3 of these birds were ringed as nestlings); and 6 records of recovery at the place of ringing in the third year (2 of these birds were ringed as nestlings). There are also the following recoveries from elsewhere than the places of ringing:

August 18th ("juv."); Spurn Head, Yorkshire.	July, next year; Whitby, Yorkshire (64 miles N.).
August 13th (adult); near Hassocks, Sussex.	June 14th, third year; Bristol (100 miles W.N.W.).
May 16th (adult); Skokholm, Pembrokeshire.	June 9th, next year; Ramsey, Isle of Man.
May 12th (adult); Skokholm, Pembrokeshire.	May 10th, next year; Barrel's Lightship, off Co. Wexford, Ireland.

In the first case in the list, the bird was not necessarily, or even probably, at its native locality at the time of ringing. The second case may indicate some displacement of breeding locality, but the bird had not necessarily bred at the place where it was ringed late in the summer. The last two cases are of birds ringed on spring migration.

Ringed as nestlings; recovered abroad:

Essex.	August 23rd, same year; Murillo, nr. Logroño, Spain.
Essex.	September 6th, same year; Braga, N. Portugal.
Surrey.	September, same year; Limoges, Haute Vienne, France.
Middlesex.	May 6th, next year; nr. Cherbourg, Manche, France.
Essex.	September, next year; Ferreira do Zezere, Estremadura, Portugal.
Surrey.	October 4th, seventh year; Sernache do Bonjardini, Beira, Portugal.

Ringed as adults; recovered abroad:

September 7th; Spurn Head, Yorkshire.	September 20th, same year; Saujon, Charente Inferieure, France.
September 8th; Lundy I., Bristol Channel.	ca. September 24th, same year; Bragança, Portugal.
July 22nd; Oxfordshire.	September 29th, same year; Bilbao, Vizcaya, Spain.
May 14th; Skokholm, Pembrokeshire.	October 1st, same year; Mirandela, N. Portugal.
July 17th; Surrey.	October 7th, same year; nr. Bourg, Gironde, France.
May 12th; Saltee, Co. Wexford.	September 7th, same year; Mirandela, N. Portugal.
May 17th; Skokholm, Pembrokeshire.	ca. September 28th, fourth year; Macedo de Cavaleiros, Portugal.

Lesser Whitethroat (*Sylvia curruca*).*Recovered in British Isles in year of ringing:*

There are 15 records, all from the place of ringing. They include two birds assigned to the Siberian race (*S. c. blythi*), caught on autumn migration on the Isle of May and recaptured there, in each case, twelve days later.

Recovered in British Isles in subsequent years:

July 13th (adult); Berkshire.

July 26th, third year; Surrey (40 miles S.E.).

Another bird was recovered at the place of ringing in the second year.

Willow Warbler (*Phylloscopus trochilus*).

From the gross total, 28 records must be excluded: 2 birds ringed as adults were recovered at the places of ringing on unascertained dates, and 26 nestlings (including some entire broods coming to disaster) had not flown.

Recovered in British Isles in year of ringing:

There are 87 records of birds recovered at or near the places of ringing after short intervals or, in the case of those ringed as nestlings, later in the same summer.

There are also the following:

April 11th; St. Catherine's Light-house, Isle of Wight.

May 2nd, same year; Williton, Somerset.

May 29th; Isle of May, Firth of Forth.

June 10th, same year; Caernarvonshire.

April 22nd; Lundy I., Bristol Channel.

July 4th, same year; Pontrilas, Herefordshire.

Nestling; Oxfordshire.

August 12th, same year; Hertfordshire (48 miles N.E.).

August 14th (juv.); Halifax, Yorkshire.

August 18th, same year; Scissett, Yorkshire (15 miles S.E.).

July 24th (adult); Isle of May, Firth of Forth.

August 8th, same year; Spurn Head, Yorkshire.

The first three records in the above list indicate the immediate direction or destination of spring migrants, and the second case is remarkable. The distances between the two points are, respectively, 95 miles W.N.W.; 210 miles S.S.W.; 95 miles N.E. The last record shows southward movement in autumn.

Recovered in British Isles in subsequent years:

There are 2 records of birds ringed as nestlings and recovered at the place of ringing in the next year. There are 2 records of birds ringed as adults at the nest and recovered nesting at the place of ringing in the next year (one had its nest within 20 yards); and one of a bird ringed as a breeding adult and recovered on a nest in the same site in the third year. There are 5 other records

of birds recovered at the place of ringing in the next year, and one of a bird recovered at the place of ringing in the third year.

There are also the following records, not from the place of ringing:

Nestling; Yorkshire.	June 18th, next year; 2 miles from place of ringing (sitting on eggs).
Nestling; Ullswater, Cumberland.	2nd week of May, next year; Blackpool, Lancashire.
Nestling; Buxton, Derbyshire.	May 20th, third year; Warminster, Wiltshire.
Nestling; Delamere Forest, Cheshire.	May, third year; near Stratford-on-Avon, Warwickshire.
August 27th (migrant); Isle of May, Firth of Forth.	May 6th, next year; Invergordon, Ross-shire.
May 2nd (migrant); Skokholm, Pembrokeshire.	August 26th, fourth year; Coupar Angus, Perthshire.
May 5th ("female"); Isle of May, Firth of Forth.	August 9th, next year; Longton, Staffs. (220 miles S.).

In the first case there is an approximate return to the native locality. The other three birds ringed as nestlings had not necessarily completed their migrations at the dates of recovery; and the native localities of those ringed otherwise than as nestlings are of course unknown.

Ringed as nestlings; recovered abroad:

Caernarvonshire.	September 5th, same year; Les Sables d'Olonne, Vendée, France.
Yorkshire.	September 28th, same year; Bilbao, Vizcaya, Spain.
Yorkshire.	April 9th, next year; Urioste-Ortuella, Vizcaya, Spain.
Stirlingshire.	October 23rd, fourth year; Sobral de Pichorro (Fomos de Algodres), Beira, Portugal.

Ringed otherwise than as nestlings; recovered abroad:

May 15th (migrant); Isle of May, Firth of Forth.	July 27th, same year; Alijo, Tras-os-Montes, Portugal.
April 9th (adult male); Gibraltar Point, Lincolnshire.	July 28th, same year; Châtellerault, Vienne, France.
August 16th ("trapped"); Sandwich, Kent.	August 31st, same year; Avila, Spain.
August 14th; Spurn Head, Yorkshire.	September 19th, same year; Ondres, Landes, France.
August 15th ("juv."); Spurn Head, Yorkshire.	mid-October, same year; Torrelaveza, Santander, Spain.
October 1st; Spurn Head, Yorkshire.	February 15th, same winter; Behima, Touggourt District, Algeria.
August 9th ("juv."); Skokholm, Pembrokeshire.	September 21st, next year; Setubal, Portugal.
October 3rd ("1st winter"); Saltee, Co. Wexford, Ireland.	October 10th, next year; Ondres, Landes, France.
April 15th ("adult migrant"); Skokholm, Pembrokeshire.	March 20th, next year; Lunel, Hérault, France.

(Since the record from Algeria was first published (*antea* p. 325), Dr. K. B. Rooke has pointed out that mid-February is earlier than one would expect to find a Willow Warbler on spring passage in North Africa. Miss E. P. Leach has accordingly made a further check. She is assured by Mr. Ralph Chislett that it is standard.

practice at Spurn Observatory to identify Willow Warblers and Chiffchaffs by wing-formula; and Mr. E. R. Parrinder confirms that this was followed in the particular case. Mons. R. D. Etchécopar has re-examined the original report received in Paris, and this states explicitly that the ring (BM219—returned at the time) was removed from a newly dead bird on February 15th, 1952. He has also consulted Mons. Heim de Balsac, who advises that the information about normal periods of migration should be taken with some reserve and that an occurrence two weeks or so earlier than usual need not be regarded as too extraordinary.)

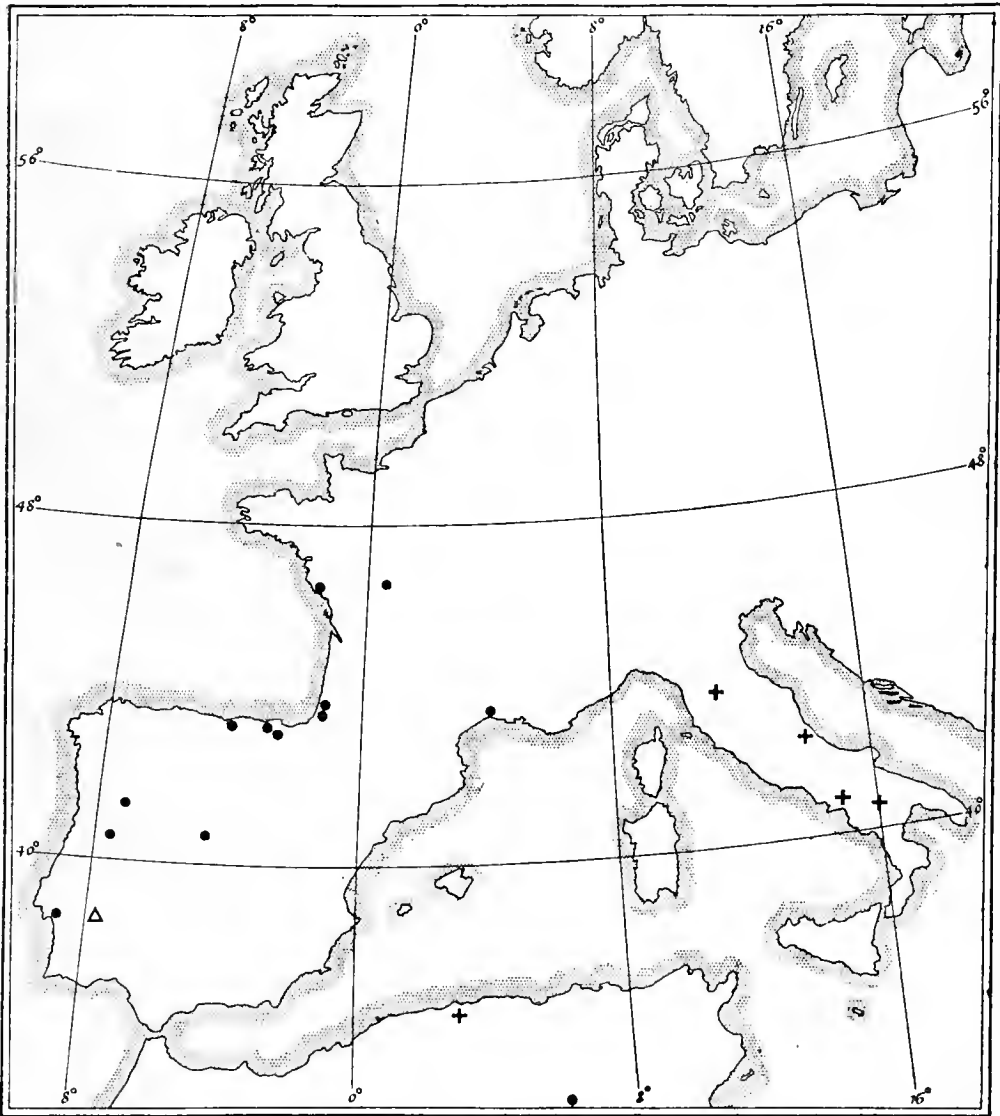


FIG. 2. RECOVERIES OF WARBLERS RINGED IN THE BRITISH ISLES.

● Willow Warbler (*Phylloscopus trochilus*);
 Δ Chiffchaff (*P. collybita*); + Wood Warbler (*P. sibilatrix*).

Chiffchaff (*Phylloscopus collybita*).

One record must be excluded (nestling which had not flown).

Recovered in British Isles in year of ringing:

12 recoveries at place of ringing.

Recovered in British Isles in a subsequent year:

Nestling; Suffolk.

May 2nd, next year; 7 miles S. of
place of ringing.

Recovered abroad:

Nestling; Buckinghamshire.

October 19th, next year; Evora,
Alemtejo, Portugal.

Wood Warbler (*Phylloscopus sibilatrix*).

Recovered in British Isles in year of ringing:

One recovery at the place of ringing.

Recovered in British Isles in a subsequent year:

Nestling; Cobham, Surrey.

May 17th, third year; Womersley,
Surrey (11 miles S.W.).

Recovered abroad:

Nestling; Westmorland.

September 18th, same year; near
Florence, Italy.

Nestling; Buckinghamshire.

September 23rd, same year; near
Potenza, S. Italy.

Nestling; Radnorshire.

October 2nd, same year; Avellino, S.
Italy.

June 16th ("young"); Gloucestershire.

September 1st, same year; Pescara,
Abruzzi, Italy.

July 12th (adult); Isle of May, Firth
of Forth.

April 8th, next year; Fondouk, near
Algiers.

The south-easterly trend of the autumn records, in marked contrast to those for other species, has previously been remarked, but the number of cases has recently increased. The spring recovery is from a locality lying to the south rather than the south-east, but further east than the great majority of recovery localities of British Warblers.

Yellow-browed Warbler (*Phylloscopus inornatus*).

The sole record is of an adult female caught on the Isle of May in September and recaptured there on each of the following two days.

Conclusions.

MOVEMENTS WITHIN THE BRITISH ISLES.

The few records of movement within the British Isles in autumn, after ringing in the breeding season, show nothing remarkable. The most interesting are those of a Sedge Warbler native to Fife and recovered at Newport, Mon., early in August, and of a Willow Warbler from the Isle of May at Spurn Head.

There are some records of birds ringed as migrants in spring and recovered later in the same spring or in the summer, presumably at or on their way to their breeding localities. Journeys

of this kind are, in the case of the Whitethroat, from Dungeness to Sheppey, both in Kent (N.N.W.), from Pembrokeshire to Somerset (E.S.E.) and from Lundy Island to Co. Kerry, Ireland; and, in the case of the Willow Warbler, from the Isle of Wight to Somerset, from the Firth of Forth to Caernarvonshire (S.S.W.—remarkable) and from Lundy Island to Herefordshire.

RETURN TO THE BRITISH ISLES.

Return to the respective places of ringing in the British Isles in subsequent years is shewn in the following numbers of cases: Reed Warbler, 1; Sedge Warbler, 4; Blackcap, 1; Whitethroat, 29; Lesser Whitethroat, 1; Willow Warbler, 12; Chiffchaff, 1; Wood Warbler, 1. The return was in most cases exact, the record being usually due to retrapping at the ringing locality, but in 5 cases recoveries from up to 12 miles distant have been counted.

Of the foregoing, the following are recorded as having been ringed as nestlings—and therefore definitely at their precise native localities—Reed Warbler, 1; Blackcap, 1 (10 miles away); Whitethroat, 5 (one of them 12 miles away); Willow Warbler, 3 (one of them, in the next year, sitting on eggs 2 miles from its own birth-place); Chiffchaff, 1 (7 miles away); Wood Warbler, 1 (11 miles away). A further 3, all Willow Warblers, were ringed as adults on the nest and recorded as breeding again at the exact locality—2 in the next year and the other in the third year.

Other birds returned to the British Isles, but not to the place of ringing, in subsequent years as follows: Sedge Warbler, 1; Whitethroat, 4; Lesser Whitethroat, 1; Willow Warbler, 6. In none of these cases are the circumstances of the recovery certainly inconsistent with the possibility that the birds had, or would have, made an exact return; there is thus no definite evidence that displacement of birds from their native or former breeding localities occurs in subsequent breeding seasons.

Of the recoveries in the British Isles, about three-fourths of the total were in the second (*i.e.* next) year after that of ringing (irrespective of age) and about one fourth in the third year, with a solitary record each from the fourth and fifth years.

MOVEMENTS OUTSIDE THE BRITISH ISLES.

The following is a summary of the recoveries abroad of birds ringed in the British Isles:

	FRANCE	SPAIN	PORTUGAL	ITALY	ALGERIA
Reed Warbler			1		
Garden Warbler	1				
Whitethroat	4	2	7		
Willow Warbler	5	4	3		1
Chiffchaff			1		
Wood Warbler				4	1

(Not all these records relate to birds known to have bred or been born in the British Isles; and not all to birds recovered during

the first southward or return migration after ringing. This consideration has been kept in view in framing the following remarks, but it does not appear to be a disturbing factor.)

With the exception of one Willow Warbler in Algeria in February, there are no records for the period from November to February. This may be taken as indicating, not surprisingly, that the records show only the migration through Europe and the Mediterranean basin, and not the actual winter-quarters (in Africa). Most of the records refer to autumn migration (July-October), and a minority to spring migration (March-May). Early dates in autumn are those for two Willow Warblers (breeding area unknown) recovered in France and Portugal, respectively, before the end of July (of the same year as of ringing in the British Isles in spring); and for a Whitethroat recovered in Spain before the end of August (of the same year as of ringing in the nest). A Willow Warbler trapped in Kent in August was recovered in central Spain fifteen days later.

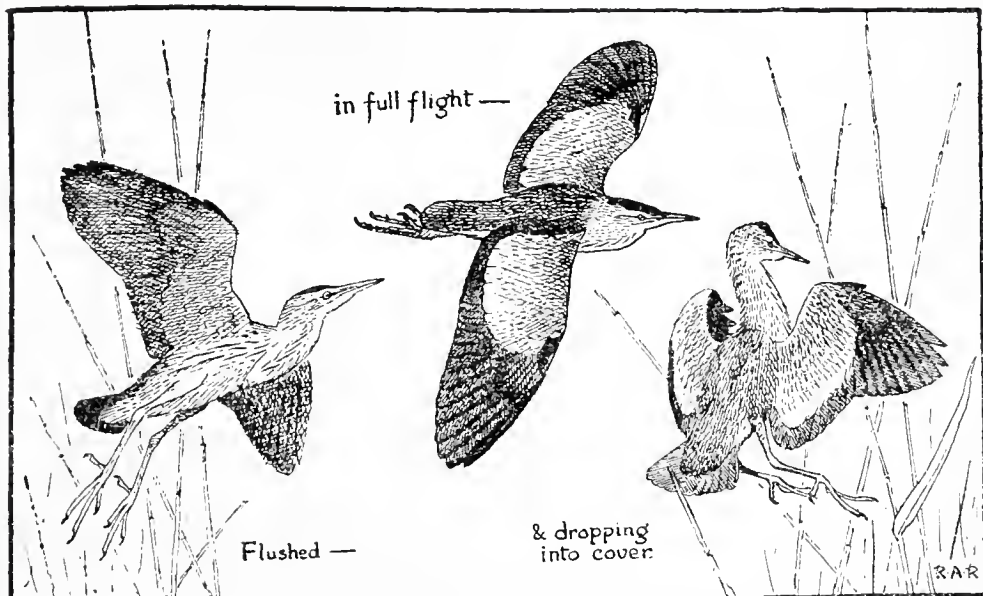
The most interesting fact that emerges from a detailed study of the records is that, apart from one species, all the recoveries are from localities on or not very far from the Atlantic seaboard of the European continent, with the exception of a Willow Warbler on spring migration in Hérault, south-western France, and another in mid-February in Algeria. In the case of the Wood Warbler, on the other hand, the only overseas records are four in autumn from Italy (all relating to birds ringed as nestlings or young earlier in the year), and one in spring from Algeria: although the number of records is small, the consistency of the pattern is remarkable. The ringing of Wood Warblers on an increased scale is much to be desired.

NOTES.

Little Bittern in Norfolk.—On July 26th, 1952, while on East Bank, Cley, Norfolk, Mr. and Mrs. H. P. Medhurst and R.A.R. saw a very small tawny heron, little larger than a Moorhen (*Gallinula chloropus*), and with dark primaries and secondaries, rise out of a narrow belt of reeds beside the bank and fly lightly for a few yards before dropping into cover again. From this brief glimpse of perhaps five seconds' duration at ten yards' range a vivid mental picture of the bird was acquired which left no doubt that it was a female Little Bittern (*Ixobrychus minutus*). Mr. A. H. Daukes and Mr. W. F. Bishop, the marsh warden, were called at once, the latter volunteering to walk through the reeds in an attempt to flush the bird which he soon succeeded in doing twice. Each time it rose steeply out of the reeds and flew quickly away for a short distance to disappear into concealment farther along.

The crown, mantle, rump, upper tail-coverts, tail, primaries and secondaries were blackish-brown and the entire under-parts

appeared dull buffish-brown, the neck and especially the flanks, streaked darker. The wing-coverts shaded from brownish-buff on the leading edge, through golden-buff to cream on the greater coverts, which, contrasting with the dark flight-feathers, formed a striking wing pattern (see sketches). The colour of the bill could not be ascertained but the feet looked yellowish-green and projected beyond the tail in full flight.



LITTLE BITTERN (♀) from field sketches.

CLEY, 1952.

While in the reeds Mr. Bishop had a momentary glimpse of the bird clinging sideways to the stems before it made off. On another occasion Mr. A. Gibbs saw it in bright sunshine pitch into the tops of the reeds and remain there with extended neck for a short while before descending out of sight.

One of us (P.J.H.) witnessed a peculiar crepuscular flight at dusk on August 13th, when the bird rose from the reeds by East Bank and passed a few feet overhead, climbing until it reached a height of about forty feet. It kept within an area of approximately thirty feet radius and flew round and round in circles and figures of eight constantly uttering a throaty "ker-ack", quite different from the motor-horn or spawning-toad note, "cock-cock" or "jonk-jonk" heard on August 29th. The wings during this flight were moving so fast that they appeared almost as a blur but they were moving through a very shallow arc and the bird merely cruising around. Still using this odd flight the bird made off towards Salthouse Marshes and was lost in the gloom.

It was last seen on November 6th by Mr. A. H. Daukes.

R. A. RICHARDSON AND P. J. HAYMAN.

Baillon's Crake in Essex.—On June 13th, 1953, at Abberton Reservoir, Essex, B. Winchester flushed a small crake from long grass within 10 yards of the water. At first sight it strongly resembled a miniature Water Rail (*Rallus aquaticus*). It flew some 10 yards and pitched into the wet grass. The observer gave chase and fell upon the bird but just failed to capture it. He was so close, however, that he could distinctly see the white markings on back and wing as described in *The Handbook*. The bill was very much shorter than the Water Rail's, but its colour could not be determined since it was caked with wet mud. Excellent views were, however, obtained of the legs, which were definitely flesh coloured and not green as in the Little Crake (*Porzana parva*), because the bird slipped and slithered all the way along a low parapet during the chase. The size was given as approximately that of a Skylark (*Alauda arvensis*). From this description there would seem to be no doubt that the bird was a Baillon's Crake (*P. pusilla*).

It is interesting to note that a Spotted Crake (*P. porzana*) was seen by Mr. Winchester in a trap at the reservoir (and subsequently ringed by Major-General C. B. Wainwright) on September 1st and he observed then that the only similarity between that species and Baillon's Crake was the white on the wing; further that there was nothing else that would make one confuse the two species as the Spotted Crake looked almost as large as a Water Rail and was a stouter bird altogether.

This would appear to be only the third record of this very rare species for the County, and the first for this century.

G. A. PYMAN.

Little Crake in Hertfordshire.—On January 22nd, 1953, while walking along the river at Oughton Head Common, near Hitchin, Hertfordshire, Mr. E. Sharpe noticed a small bird which was strange to him, running over the floating vegetation which bordered the river on one side. The next day, in company with Mr. J. A. McRitchie, he saw the bird again in almost the same spot, and as it flew away it revealed a dark brown back and wings, streaked black. It was noticeably much smaller than a Water Rail (*Rallus aquaticus*), which was present for comparison, and was about the size of a Starling (*Sturnus vulgaris*). On rising, it uttered a very faint single note, repeated two or three times, resembling that of a Moorhen (*Gallinula chloropus*), but much softer. The writer was able to confirm these details early on the morning of February 1st.

During the next few weeks this extremely skulking bird was seen by various observers frequenting small ditches with little water and masses of cover, or sluggish streams with floating vegetation, and under these conditions it was quite impossible to watch the bird for any length of time. Nevertheless, as the weeks went

by fresh details were collected and the bird was identified beyond doubt as an adult male Little Crake (*Porzana parva*); the slate grey breast and under-parts, the barred black and white under tail-coverts and the green legs were all seen, and J. A. McR. was very lucky indeed to notice the very slightly barred flanks, and red at the base of the bill. The precise colour of the remaining part of the bill was not determined. In size, the bill was short compared with that of the Water Rail. The bird was last seen on March 19th, after having been observed on no less than twenty-seven occasions.

There is possibly one other occurrence of this species in Hertfordshire and the writer is grateful to Mr. B. Sage for drawing his attention to it. In the *Trans. Herts. Nat. Hist. Soc.*, vol. 5, p. 79, it is stated on the authority of the Hon. W. Rothschild that a Little Crake was shot at Tring on January 5th, 1887. Hartert and Jourdain, however (*Birds of Buckinghamshire and Tring Reservoirs*, p. 248), considered that this record was doubtful as the specimen could not then (1920) be traced. A. R. JENKINS.

Waders "coughing."—With reference to the two notes by Mr. P. W. P. Browne and Dr. R. J. H. Raines on the presumed "coughing" of small waders (*antea*, vol. xlv, pp. 370-371), I would like to record the following observations.

During the period August 11th to October 2nd, 1940, I had in captivity an Oystercatcher (*Hæmatopus ostralegus*) that I had found shot with injured wings. This I fed upon a variety of food, including cut-up mussels and also a fairly large quantity of shrimps caught locally. I kept this bird in a large enclosure surrounded by wire netting and with adequate water and sand environment, making so far as the limits permitted, as near an approach to natural conditions as I could. The point now pertaining is that this bird "coughed" and in most of the instances which I witnessed it was a preliminary action to the ejection of a pellet. The ejection of pellets was not a regular habit, so far as I could see, but depended upon the food the bird had been consuming, being more frequent when the diet contained a large proportion of the above-mentioned shrimps, whose harder parts were the major portion of the ingredients of the pellets. The bird's stance was fairly normal, that is the usual almost horizontal body position, but when it was "coughing" its body was jerked up and down from the tarsal joint, its bill was slightly open and often the bird closed its eyes. After the pellet was ejected, it hunched itself up with the bill closed and straight out in front of it, again often with the eyes closed, giving me the impression it was somewhat of an effort to complete this action. The bird evidently thrived upon the diet provided, because the wing muscles healed and it eventually flew away about dusk on October 2nd, 1940.

By coincidence, I also had a Dunlin (*Calidris alpina*) during the September of that period, which had been found below some telephone wires with a wing almost severed. I amputated the wing and managed to keep the bird for about three weeks, but it eventually died. During the first week or so, it fed quite well on finely-cut up shrimps and mussels, these being laid in a shallow pan of water. I cannot recollect hearing this bird "eough" but it used to "sneeze" quite often, especially when foraging for food in the water. On these occasions its head appeared to have a sideways twist, the bill coming round almost to right angles with the line of the body, and quite a strong "tish" sound was emitted. I did not detect my bird ejecting pellets, but I have watched Dunlin disgorging small objects on to the mud at Breydon Water, Norfolk, and at Benaere, Suffolk.

On May 10th, 1942, I was on the north wall at Breydon, observing waders, when I heard a noise which I traced to a Redshank (*Tringa totanus*) and which sounded very like a "eough"—a sort of "chuk-ehuk" sound repeated fairly rapidly. The bird appeared to be agitated and whilst I was looking it put its head up in the air with the bill, open slightly, skywards and then brought it down sharply and ejected a pellet. This I retrieved from the mud. Later in the day I found, on an adjacent muddy beach, quite a number of very similar pellets, old and new.

In the early morning, on September 11th, 1949, I was in a hide at Benaere Denes, Suffolk, watching a number of species of waders. Amongst these were two Spotted Redshank (*T. erythrophus*) which seemed very lethargic (it was just as light was breaking). As the light increased, they appeared to wake up and began to feed. After a while one of them started to make a "ehuffing" noise, bobbing up and down with bill very slightly open, although continuing to stand in one spot. Here again, I had the impression it was considerably agitated. The "eoughing" continued for quite two minutes and then this bird put its bill down towards the water and ejected a small object. After a few seconds, when it seemed to be resting, it resumed feeding.

I have also heard Rooks (*Corvus frugilegus*) and Herons (*Ardea cinerea*) make eoughing noises, this when I have been watching the birds at nesting-sites, although in these cases I have noted no result. These two species do, however, eject pellets and I wonder if the guttural eoughing noise made by them may not be related to this action.

So far as the occurrence of this "eoughing" and "sneezing" is concerned, I myself had rather regarded it as a not infrequent action. But possibly it is only produced by individual birds which have some disease or structural abnormality.

JAMES G. WARNER.

Marsh Sandpiper in Cheshire: correction.—With reference to the record of a Marsh Sandpiper (*Tringa stagnatilis*) at Altrincham, Cheshire, in 1952 (*antea*, p. 260), it has been pointed out by Mr. A. R. Sumerfield and Mr. John Southern that in the published account the date upon which the bird was first identified is wrongly given and there is no mention of the date upon which it was last seen. It was in fact first noted on August 10th and last observed on the 13th.

Great Skua in Kent in May.—With reference to the note (*antea*, p. 65) discussing the paucity of spring records of the Great Skua (*Stercorarius skua*) in British waters other than in the breeding areas, Mr. M. R. Chettleburgh and Mr. Philip S. Redman have written separately to report seeing single birds of this species on May 6th, 1951, at Cliffe and at Cooling Marshes (both in N. Kent) respectively. The two reports presumably refer to the same individual and this appears to be only the third May record of the species in England. Mr. Redman saw the bird only for a short time as it flew along the sea-wall, but Mr. Chettleburgh had excellent views of it for 15 minutes, 10 of which it spent preening on the top of a 6-foot mound.

White's Thrush on Lundy.—A White's Thrush (*Turdus dauma*) was present on Lundy from October 15th to November 8th, 1952. It remained throughout its stay in a small, densely-wooded part of Millcombe, in the south-east of the island. Although frequently feeding on open sward near the owner's residence, it was extremely shy, and fled at once into cover when disturbed, and none of the observers who saw the bird was able to watch it at leisure. On October 15th I watched the bird for a few seconds at a range of barely 10 feet, and this view, with many subsequent glimpses, provided an adequate description. It was a large thrush, about the size of a Mistle-Thrush (*T. viscivorus*), both species being seen at once on November 3rd. The upper-parts were a rich golden-brown, each feather tipped with a crescentic black mark. This pattern extended to the base of the tail, and could be seen clearly at a considerable distance. The under-parts were paler, with similar markings. The under-wing showed a striking pattern in flight, black with a white bar. The outer tail-feathers had distinct white tips. The soft parts were apparently dark brown. No call was heard at any time. The bird was seen on several occasions by Miss Mary Gade and John Ogilvie, and once by F. W. Gade. PETER DAVIS.

Nightingale as foster-parent of young Cuckoo.—The Nightingale (*Luscinia megarhyncha*) appears to be a very unusual victim of the Cuckoo (*Cuculus canorus*)—John Walpole-Bond, for example, in his *A History of Sussex Birds* (1938, vol. ii, p. 195), is only able to cite one Sussex record of this in a long list of unusual foster-

parents—and so we feel that it is worth placing on record that Mr. M. Philips Priece found a Cuckoo's egg in a Nightingale's nest at Rudford Green, near Gloucester, on May 18th, 1952. The young Cuckoo was seen in the nest on various occasions from the beginning of June until June 15th when it disappeared without trace. It may be of interest to add that there is a painting by H. Grönvold in Kirkman and Jourdain's *British Birds* (1938, plate 184) of a Cuckoo's egg taken from a Nightingale's nest in Surrey.

White-spotted Bluethroat in Northumberland.—On April 18th, 1953, an adult male White-spotted Bluethroat (*Luscinia svecica cyaneacula*) arrived in a coastal cottage garden two miles south of Monks' House Observatory in Northumberland. It was extremely tame, coming on many occasions within a few yards of a group of observers, and did not seem to be nearly so anxious to take cover as is usual with Bluethroats. The white spot was small, often invisible when the bird held its head down, but flashed out clearly whenever the head was raised. This bird appears to have been recorded on less than twenty occasions in the British Isles, and not previously in Northumberland. *The Handbook* description (under *L. s. svecica*) of a "slim Robin" did not apply in this example: the bird was distinctly more robust and rotund than a Robin (*Erithacus rubecula*).

E. A. R. ENNION.

Greenish Warbler on Great Saltee, Co. Wexford.—On August 25th, 1952, there were only two warblers in the garden trees on Great Saltee Island, Co. Wexford, when early-morning fog had cleared. One was a Chiffchaff (*Phylloscopus collybita*), the other a Greenish Warbler (*Ph. trochiloides*), an addition to the Irish list. As I was unable to trap the bird I shot it. The skin was examined by Mr. R. Wagstaffe at the Liverpool Public Museum and he kindly confirmed the identification. It has now been deposited in the National Museum, Dublin.

I had the bird under observation for about an hour as it fed in the sycamores. The most useful field-characters were (i) a scarcity of yellow in the plumage when compared with the Chiffchaff, upper-parts being grey-green, greenest on primaries, under-parts whitish-grey perhaps with a trace of yellow; (ii) a noticeable short pale wing-bar; (iii) a fairly prominent pale superciliary stripe, tinged yellow behind eye. Legs greyish-flesh. Size and behaviour about as Chiffchaff. A loud "tswcep", similar to the call of a Yellow Wagtail (*Motacilla flava*) was heard frequently and the bird also uttered several short phrases of song, each lasting about two seconds. Each phrase was a short, rather high-pitched warble, of pattern quite new to me but which I wrote down as "twissa wissa wissa".

P. W. P. BROWNE.

Chiffchaff eating aphids in mid-winter.—The ability of an almost completely insectivorous warbler to survive an English winter would naturally be considerably facilitated by the discovery of a plentiful supply of insects during that period. In this connection, it is interesting to note that on January 3rd, 1953, at Stone Marshes, near Dartford, Kent, I watched a Chiffchaff (*Phylloscopus collybita*) feeding voraciously on the nymphs and adults (scarcer) of an aphid which was numerous on the leaves and stems of Oxford Ragwort (*Senecio squalidus*). I collected some specimens and submitted them to Mr. J. P. Doncaster at the British Museum (Natural History), who considered them to be of the genus *Macrosiphum*, probably *euphorbiae* (Thos), (winter form).

The bird was seen by several other observers on or about this date in the same locality, but was not present on January 18th, though aphids were still common on the ragwort. J. F. BURTON.

Rustic Bunting in Pembrokeshire.—On June 8th, 1953, a Rustic Bunting (*Emberiza rustica*) was caught in the Garden Trap on Skokholm, Pembrokeshire. On examination it was found to be an adult female. Its weight was 19.1 grammes. The bird was not observed at all well before it was caught, and disappeared as soon as it was released so that no field description is available. This is apparently the first record for Wales. P. J. CONDER.

[Mr. Conder has sent us an exact copy of the very full laboratory description that was taken at the time. This is being filed for reference.—EDS.]

NOTICES AND REQUESTS FOR INFORMATION.

"Invasion" of Crossbills.—As suggested in our July number (*antea*, p. 271), 1953 has been a Crossbill year and in answer to our request a considerable number of records has been sent to us. Mr. J. H. R. Boswall of 21, Preston Road, Brighton, has agreed to undertake for us a full analysis of the movement and any records not already sent should be forwarded to him at the above address.

Records should include where possible the following information: number in each flock (with age and sex details if determined), locality (including nearest town), date, observer's name (in capitals please), and any remarks on habitat (e.g. type or species of tree, haystack, plough, etc), actual food, association with other species, or evidence of migration actually in progress. Only 1953 records are called for at present, but in order that the full biological significance of the immigration can be determined, it is important that the follow-up observations on wintering birds, on a possible return migration early in March and on nesting birds in February and March be made and collated. Mr. Boswall would welcome all such 1954 records as made, or by the end of May, 1954.

All records will be acknowledged individually and in the published account. The success of this venture in "network research" depends upon our being able to extract the maximum number of records from all sources. Any help readers of *British Birds* can give will be greatly appreciated.

Unusual passage of Ruff, Little Stint and Curlew Sandpiper.—It is evident that certain species of waders, notably Ruff (*Philomachus pugnax*), Little Stint (*Calidris minuta*) and Curlew Sandpiper (*C. testacea*), passed through the British Isles during the autumn of 1953 in unusual numbers. Mr. A. E. Vine,

of Station House, Haverhill, Suffolk, intends to analyse the extent of this movement and we will be very grateful therefore if readers will send all records of these three species to him. It is possible that the numbers of certain other waders were also noteworthy if less obvious—it is thought that the Spotted Redshank (*Tringa erythropus*) falls into this category—and so general comments on the frequency, compared with previous years, of other waders would be valuable. Information is wanted for both coastal and inland localities (the feature of the Little Stint passage seems to have been the number recorded inland); and negative information particularly for dates on and around August 23rd would also be welcomed.

REVIEWS.

The Birds of the British Isles. By D. A. Bannerman and G. E. Lodge. (Oliver & Boyd, Edinburgh, 1953.) Vol. I. 45s.

This work was conceived as a vehicle to make available a complete range of Mr. Lodge's fine paintings. Undoubtedly his most widely known work is in *The Handbook* to which he contributed a number of illustrations, but the plates in the present volume are far more attractive and satisfying from an artistic point of view. They are considerably larger, with only one species on a full-page plate in nearly every case and hardly ever more than two individual birds; these are often placed towards a corner of the plate, so that the illustrations are not so much close-up portraits, as pictures of birds and the surroundings in which they are typically found. This treatment is not designed to facilitate the identification of species which have a range of plumages varying much with age, sex or season, and there are occasional criticisms which could be made of shade, plumage detail and stance—but in no other work of modern times is it possible to obtain such atmosphere as this spaciousness conveys, and the same may be said of the text.

As regards the text, many people, feeling that *The Handbook* included the greater part of what was known about British birds, must have wondered how Dr. Bannerman could hope to write an extensive work, running to seven volumes or so, without merely producing a puffed-out version of *The Handbook*. In fact Dr. Bannerman, unlike the authors of probably every other book on British birds since the publication of *The Handbook*, has taken relatively little from it, and for the resultant gaps in his coverage he constantly refers the reader to *The Handbook*.

The plan of the book is on the following lines:

Races, if any...*Identification*, based principally on the field notes of the author or others personally acquainted with the species concerned, but unambitious in comprehensiveness for, to use his words, "I have not attempted to give any detailed descriptions, contenting myself with a paragraph sufficient, I hope, to enable a bird to be identified when it has attained its adult dress, aided of course by Mr. Lodge's paintings. *Local Distribution* is generally up to date and in some cases also includes details of past status. *Distribution Abroad* is given in broad outline. The remaining headings are *Habits*; *Migrations*; *Breeding Habits*.

It is to these last three sections that the bulk of the book is devoted. Here Dr. Bannerman, with his extensive and repeated travels abroad to the homes of our vagrants and the winter quarters of our summer visitors, has made his special contribution. And here a good deal of information not available elsewhere in English literature will be found, especially on our rarer birds. The writing is discursive, with long extracts from other authors, and delightfully lacking in insularity. Where, in following the birds abroad, his own experiences and a wide range of published sources of information fail, Dr. Bannerman is fortunate indeed in being able to include previously unpublished accounts by Dr. H. M. S. Blair, Col. R. F. Meiklejohn, Major W. M. Congreve, and for Russian species Madame E. Kozlova. Little German literature, however, seems to have been consulted and a much fuller picture of central Europe and migra-

tion through and from that area could have been given by reference to Niethammer's *Handbuch der Deutschen Vogelkunde*.

The many who take aesthetic pleasure in just going out and enjoying watching birds, without feeling the compulsion that their every moment in the field must be spent in making some observation of scientific value, will greatly appreciate this book. Unhampered by considerations of expense and space, it is not packed full of new facts on every line, but can be read pleasurably, and from it much will be learnt.

The arrangement of species is in *The Handbook* order, beginning with Raven. The nomenclature, both English and scientific, follows the same authority in the main, but not exactly, and the Yellow-billed Chough is added, in square-brackets. The present volume extends to 353 pages, covering 49 species, from Raven to Tree Sparrow. All are illustrated in colour. P.A.D.H.

The Channel Islands. By W. D. Hooke. (Robert Hale, Ltd., London, 1953). Pp. 211. 18s.

THIS pleasantly written and instructive book contains a chapter of 28 pages on "Wild Life," which gives a good idea of the status of the islands' birds. From this we learn that the Wryneck, Chough and Roseate Tern have been lost as breeding species and that the Raven only just continues to breed. There are few woodlands and, although there are many hedgerows, Passerines are few, except on migration. The Willow Warbler, for example, rarely nests, although the Chiffchaff does so commonly; most notable is the indigenous Dartford Warbler, but this is found on Jersey only; the Yellow Wagtail has quite recently established a small colony. The Jay, which was introduced to Jersey, is common on that island only. Magpies, common to most of the islands, nest at times on the cliffs, as do most of the Carrion Crows. The colonisation of the islands by the Gannet since 1940 is by far the most interesting of recent changes. Of cliff-breeders, the Puffin, Razorbill and Guillemot, and the Shag and Cormorant breed freely, and the Kittiwake sparingly. The Storm Petrel also is a regular breeder. The Société Jersiaise has established a bird observatory and has organised ringing and a better regard for bird protection is very gradually taking hold, but excellent bird laws are still very largely disregarded. Fortunately two sanctuaries, one of them Burhou, off Alderney and the other on Jersey, have been established. There is evidently a quite considerable difference between the bird fauna of one island and another. A.W.B.

International Committee for Bird Preservation; British Section: Annual Report for 1952. (I.C.B.P., c/o British Museum (Nat. Hist.), Cromwell Road, London, S.W.7, 1953). 2s.

During the year 1952 the indefatigable protectors of nature were required to enter the lists in quick succession at Bologna, Caracas and Madrid, and it says much for the stamina and talents of the Honorary Secretary of the I.C.B.P. that she not only lived through it and achieved a fair measure of progress at these too frequent international conferences but was also able to carry through on the home front one of the most energetic and successful large-scale operations in the entire history of bird protection. In mid-May at Bologna it was resolved to press governments for effective support to investigations for a constructive and acceptable solution of the oil pollution problem. On June 26th at the House of Commons a permanent representative committee was set up to focus the now widespread public interest; on July 21st the Minister of Transport appointed an official committee to report on the necessary measures; in August the tanker companies initiated experiments at sea to trace the drift and behaviour of discharged oil, and (after the period covered by this report) a satisfactory official plan was produced with the general acceptance of the British shipping industry and promising progress was made towards securing its adoption internationally. Unless some extraordinary unforeseen reverse takes place it does not seem too optimistic to hope that effective world action against the long neglected and chronic oil menace will soon begin.

An unimpressive feature, with the limited exception of duck counts, was the achievement in the important field of wildfowl protection and preservation, in which divided effort, lack of manpower and funds and other factors continued to hold up real progress.

At the Madrid meeting of the Conseil International de la Chasse, Dr. Boje Benzon, Chairman of the European Continental Section of I.C.B.P. commented significantly on the great recent change in the relations between sportsmen and protectionists:

"the sportsmen thought that the establishment of reserves was done to annoy them, and it must be admitted that instead of hunting game the sportsmen began to hunt the protectionists. But fortunately all that is changed. . . . All sportsmen now know that without protection there would be no game and without game there would be no sport. One now finds sportsmen who are more protectionist than the protectionists."

If this is true on the Continent it is unfortunately only partly true in Britain, but there is no doubt that Dr. Benzon, himself an internationally famous shot, has put his finger on the main trend. The problem is to speed it up. E.M.N.

LETTER.

NORFOLK BIRD REPORT.

To the Editors of BRITISH BIRDS.

SIRS,—Beginning with 1953 an annual report for the county of Norfolk is to be published jointly by the Norfolk and Norwich Naturalists' Society and the Norfolk Naturalists' Trust and I would be grateful if any of your readers who have records of observations made in Norfolk in this or subsequent years would kindly send them to me, as Editor, at 33, Acacia Road, Thorpe, Norwich, Norfolk.

This new report will replace *Wild Bird Protection in Norfolk* formerly published by the Norfolk Naturalists' Trust.

The Cambridge Bird Club, Great Yarmouth Naturalists' Society and the Lynford Hall Bird Club have promised to co-operate by supplying records from their respective areas.

MICHAEL J. SEAGO.

[We wish every success to the new report covering this important county and hope that the many visitors to Norfolk will make their observations available to it.—Eds.]

ERRATA.

VOL. XLV.

- p. 464. In *British recoveries of birds ringed abroad* under Purple Sandpiper (C. 794981), for latitude of ringing locality "67° 15' N." read "66° 12' N."

VOL. XLVI.

- p. 76. Line 13 from bottom, for "Savidge" read "Savage".
 p. 156. Line 12 from bottom, for "exterpation" read "extirpation".
 p. 210. Line 27 from bottom, for "cinerea" read "brachyductyla".
 p. 219. Line 19, for "the first record" read "the second record".
 p. 226. Line 17, for "Exe" read "Axe".
 p. 260. Line 4, for "August 13th" read "August 10th".
 p. 271. Line 6 from bottom, for "many" read "a few".
 p. 300. Line 14 from bottom, for "arvensis" read "jabalis".
 p. 308. Line 13, for "greatly stretched" read "gently stretched".
 p. 329. In *Report on Bird Ringing for 1952* under Linnets (H.1579), for ringing date "29.8.50" read "29.4.50".
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INDEX.

We have felt that in recent years the index to *British Birds* has had room for improvement, having been compiled for the most part only of the subjects and species that appeared actually in the titles of papers and notes. Many important references to species discussed in the text were thus omitted, a notable example of this being the lack of references, before the 1952 index, to the individual species appearing in such lists as the reports on observatories and on bird ringing. Further, the scientific nomenclature has always been indexed not under the generic name, but under the specific—a rather unsatisfactory method. We therefore approached Mr. Raymond Irwin and discussed with him a revision of the lay-out. On his advice a modified system has been adopted and, beginning with the present index, the task has been undertaken by Miss N. D. Giffard. We are very grateful to her for her work and to Mr. Irwin for his advice.

The new index contains entries in a single list with references to:

(i) every *significant* mention of each species, not only in titles, but within the text of papers and notes, including all those appearing in such lists as *Reports from Bird Observatories, 1952* and *Report on bird-ringing for 1952*; there are also references to each species noted in the summaries of county bird reports;

(ii) scientific nomenclature which is now listed under generic and not specific names;

(iii) authors of all papers, notes and letters; and photographers;

(iv) a few subject headings, namely "Display", "Migration" and "Song";

(v) "Reviews" which are listed together under this heading in alphabetical order of authors reviewed; "Reports, Summaries of" which are grouped together in alphabetical order of areas covered.

In the case of such groups as "Bunting", "Thrush", "Duck", etc., there are cross-references to those members of the family which do not bear the family name and so appear elsewhere, e.g. "Yellowhammer", "Fieldfare", "Wigeon", etc.

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